

SERVICE MANUAL

STEREO VIDEO CASSETTE RECORDER BASIC TAPE MECHANISM : D-33

This Service Manual is the "Revision Publishing" and replaces "Simple Manual" (S/M Code No. 09-996-332-8T1).

TABLE OF CONTENTS

SPECIFICATIONS	3	15. Support CST	62
ACCESSORIES LIST	3	16. Base Assembly P4	62
DISASSEMBLY INSTRUCTIONS	4	17. Opener Lid	62
SERVICE POSITION	5	18. Arm Assembly T/up	62
VCR TEST TAPE INTERCHANGEABILITY TABLE	6	19. Arm Assembly Pinch	62
ELECTRICAL MAIN PARTS LIST	7 ~ 9	20. Belt Capstan/Motor Capstan	63
TRANSISTOR ILLUSTRATION	9	21. Clutch Assembly D33	63
WIRE HARNESS DIAGRAM	10	22. Lever F/R	63
BLOCK DIAGRAM	11 ~ 20	23. Gear Assembly H-Up/D or Gear Assembly Up/D	63
SCHEMATIC DIAGRAM		24. Bracket Assembly Jog	64
1. POWER SECTION	21 ~ 22	25. Guide Rack F/L, Gear Rack F/L	64
2. AUDIO/VIDEO SECTION	23 ~ 24	26. Brake Assembly Capstan	64
3. SYSTEM CONTROL/SERVO/OSD SECTION) ..	27 ~ 28	27. Gear Drive/Gear Cam/Gear Connector	65
4. Hi-Fi/SCART SECTION	29 ~ 30	28. Bracket Assembly L/D motor	65
5. TUNER/IF SECTION	31 ~ 32	29. Gear Sector	66
6. NICAM SECTION	33 ~ 34	30. Base Tension/Plate Slider/Lever Tension	66
7. FRONT-1 C.B	37	31. Gear Assembly P3/Gear Assembly P2	67
8. FRONT-2 C.B	37	32. Base Assembly P3/Base Assembly P2	67
WAVEFORM		33. Arm Assembly Idler Jog or Arm assembly Idler	67
1. VIDEO SECTION	25	DECK MECHANISM ADJUSTMENT	
2. SERVO/OSD SECTION	26	Tools and Fixtures for service	68
3. TUNER/IF SECTION	32	1. Mechanism Alignment Position Check	69
4. NICAM SECTION	34	2. Preparation for Adjustment	70
WIRING		3. Checking Torque	70
1. MAIN C.B SECTION	35 ~ 36	4. Guide Roller Height Adjustment	71
2. FRONT 1 C.B SECTION	38	4-1. Preliminary Adjustment	71
3. FRONT 2 C.B SECTION	38	4-2. Precise Adjustment	71
IC DESCRIPTION	40 ~ 45	5. Audio/Control (A/C) Head Adjustment	72
ADJUSTMENT	46 ~ 47	5-1. Preliminary Adjustment	72
MECHANICAL EXPLODED VIEW 1/1	48	5-2. Confirm that the Tape Path smoothly between the Take-up Guide and Pinch Roller	73
MECHANICAL PARTS LIST 1/1	49	5-3. Precise Adjustment (Azimuth Adjustment)	73
MECHANISM EXPLODED VIEW 1/3, 2/3, 3/3	50,52,54	6. X-Value Adjustment	73
MECHANISM PARTS LIST 1/3, 2/3, 3/3	51,53,55	7. Adjustment after Replacing Drum Assembly (Video Heads)	74
DECK MECHANISM PARTS LOCATIONS		8. Check the Tape Travel after Reassembling Deck Mechanism	74
Top View	56	8-1. Checking Audio and RF Locking Time during Playback and after CUE or REV	74
Bottom View	56	8-2. Check for Tape Curling or Jamming	74
DECK MECHANISM DISASSEMBLY		MAINTENANCE/INSPECTION PROCEDURE	
1. Drum Assembly	57	1. Check before starting Repairs	75
2. Plate Assembly Top	59	2. Required Maintenance	76
3. Holder Assembly CST	59	3. Scheduled Maintenance	76
4. Guide CST	59	4. Supplies Required for Inspection and Maintenance ...	76
5. Bracket Side (L)/Bracket Assembly Door	59	5. Maintenance Procedure	76
6. Arm Assembly F/L	59	5-1. Cleaning	76
7. Lever Assembly S/W	59	5-2. Greasing	77
8. Arm Assembly Cleaner	60	MECHANISM TROUBLESHOOTING GUIDE	
9. Head F/E	60	1. Deck Mechanism	78
10. Base Assembly A/C Head	60	2. Front Loading Mechanism	81
11. Brake Assembly S	61		
12. Brake Assembly T	61		
13. Arm Assembly Tension	61		
14. Reel S & Reel T	61		

SPECIFICATIONS

Video recording system	Rotary 2 head helical scanning system	Rewind time:	Approx. 3 min. with E-180 tpe
Video head	Double azimuth 4 heads	Channel coverage	VHF-low: C02 to C04, C13 to C20 (SECAM), S01 to S07
Tuner system	Frequency synthesized tuner		VHF-high: C05 to C12, S08 to S41
TV system	B/G, L/L' SECAM, B/G PAL		UHF: C21 to C71
Video signal system	SECAM/MESECAM/PAL color signal, 625 lines, 50 fields	Video input	0.5 - 2.0 Vp-p, 75 ohm, unbalanced
Usable cssettes	VHS video cassettes	Video output	1.0 Vp-p, 75 ohm, unbalanced
Recording/playback time	PAL/SECAM/MESECAM SP: 4 hours 20 minutes max. with E-260 tape. LP: 8 hours 40 minutes max. with E-260 tape NTSC (Playback only) SP: 3 hours max. with T-180 tape LP: 6 hours max. with T-180 tape EP: 9 hours max. with T-180 tape	Horizontal resolution	240 lines
		Video S/N	43 dB (SP)
		Audio track	3 tracks (Hi-Fi sound 2 tracks, Normal sound 1 track)
		Audio input	SCART: -8 dBs, 22 k ohm
		Audio output	SCART: -8 dBs, less than 2.2 k ohm
		Hi-Fi frequency response	20 Hz - 20 kHz
		Hi-Fi dynamic range	More than 80 dB
		Hi-Fi wow & flutter	Less than 0.01%(nominal)
		Operating temperature:	5 °C to 40 °C
		Power requirements	200 - 240 V AC, 50 Hz
		Power consumption	20 watts TYPE 3.5 watts (power save mode.)
Tape speed	PAL/SECAM/MESECAM SP: 23.39 mm/sec. LP: 11.69 mm/sec.] NTSC (Playback only) SP: 33.35 mm/sec. LP: 16.67 mm/sec. EP: 11.12 mm/sec.	Dimensions	360 (W) x 278 (D) x 95 (H) mm (14 ¹ / ₄ x 11 x 3 ³ / ₄ in.)
		Weight	Approx. 3.3 kg (7.26 lbs.)

- Design and specifications are subject to change without notice.

ACCESSORIES LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	S8-35R-P00-36B		INSTRUCTION ASSY(FX5200LE)
2	S7-11R-1P0-16A		REMOTE CONTROLLER ASSY
3	S5-640-18B-000		PLUG ASSY PHONO CORD
4	S8-610-33B-000		CABLE SET ASSY
5	S8-610-45F-000		CABLE, COAXIAL 1.2M/M
6	S8-615-05R-000		CABLE ASSY

DISASSEMBLY INSTRUCTIONS

1. Top Case Removal

- 1) Remove 4 screws holding the top case.

2. Panel Front Removal (see Fig. 1)

- 1) Release 7 tabs, and then remove the panel front.

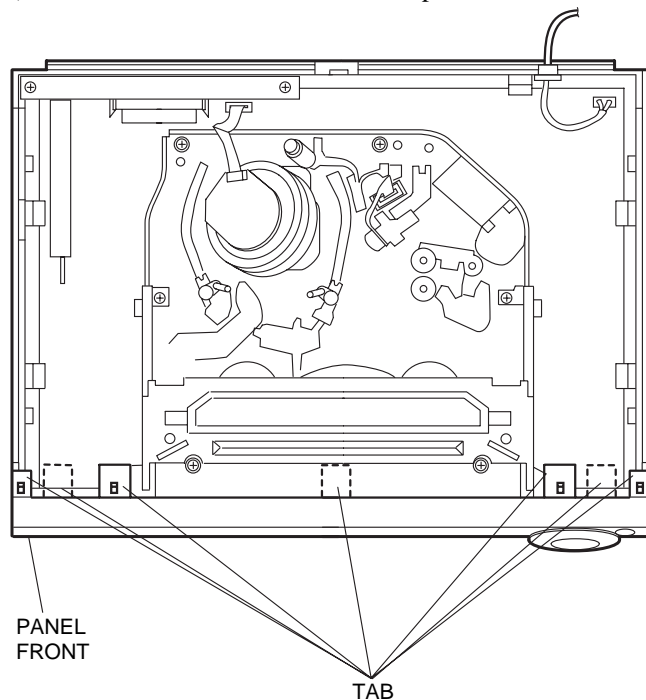


Fig. 1

3. Front-1 C.B. and Front-2 C.B. Removal (see Fig. 2)

- 1) Release 2 tabs, and then remove front-1 C.B. from the connector (PKM02) in the direction of arrow (1).
- 2) Release the tab, and then remove front-2 C.B. from the connector (PKM01) in the direction of arrow (2).

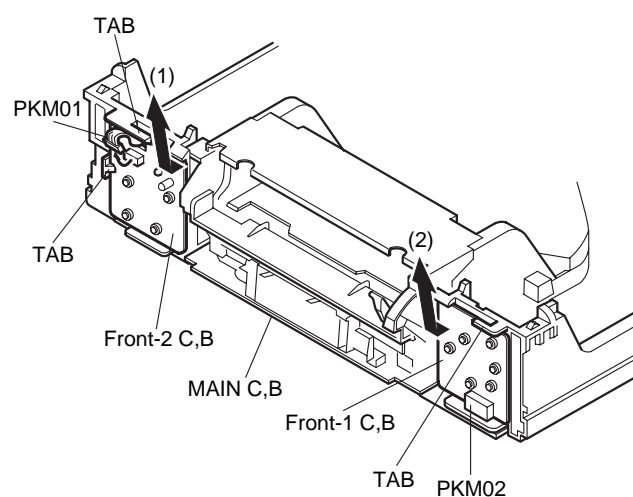


Fig. 2

4. Mechanism Removal (see Fig. 3)

- 1) Disconnect the drum FF cable from the connector (PMD01) on the Main C.B.
- 2) Disconnect the ACE head FF cable from the connector (P3D02) on the Main C.B.
- 3) Remove 6 screws (A).

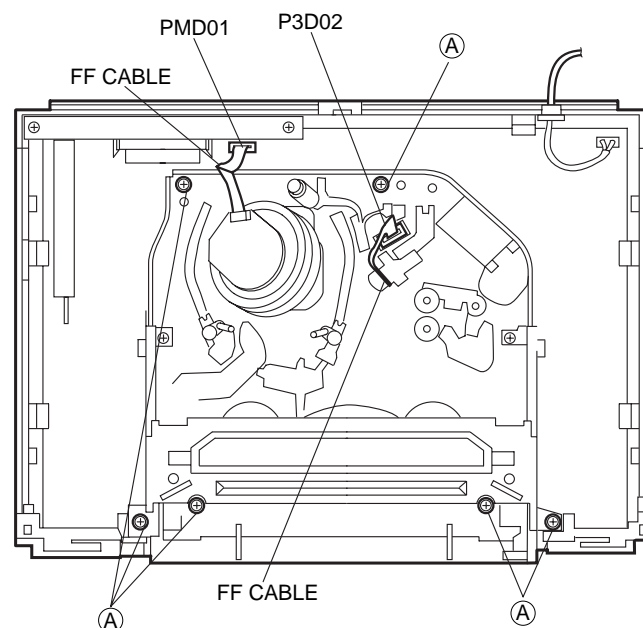


Fig. 3

5. Main C.B. Removal (see Fig. 4)

- 1) Remove 2 screws (B) holding the panel assy, distributor.
- 2) Release 5 tabs, and then simultaneously lift the panel assembly, distributor and Main C.B. to remove them.

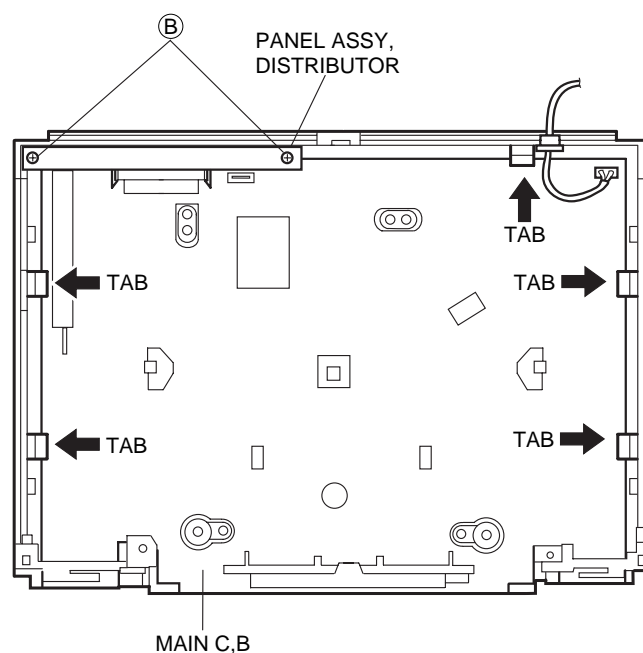
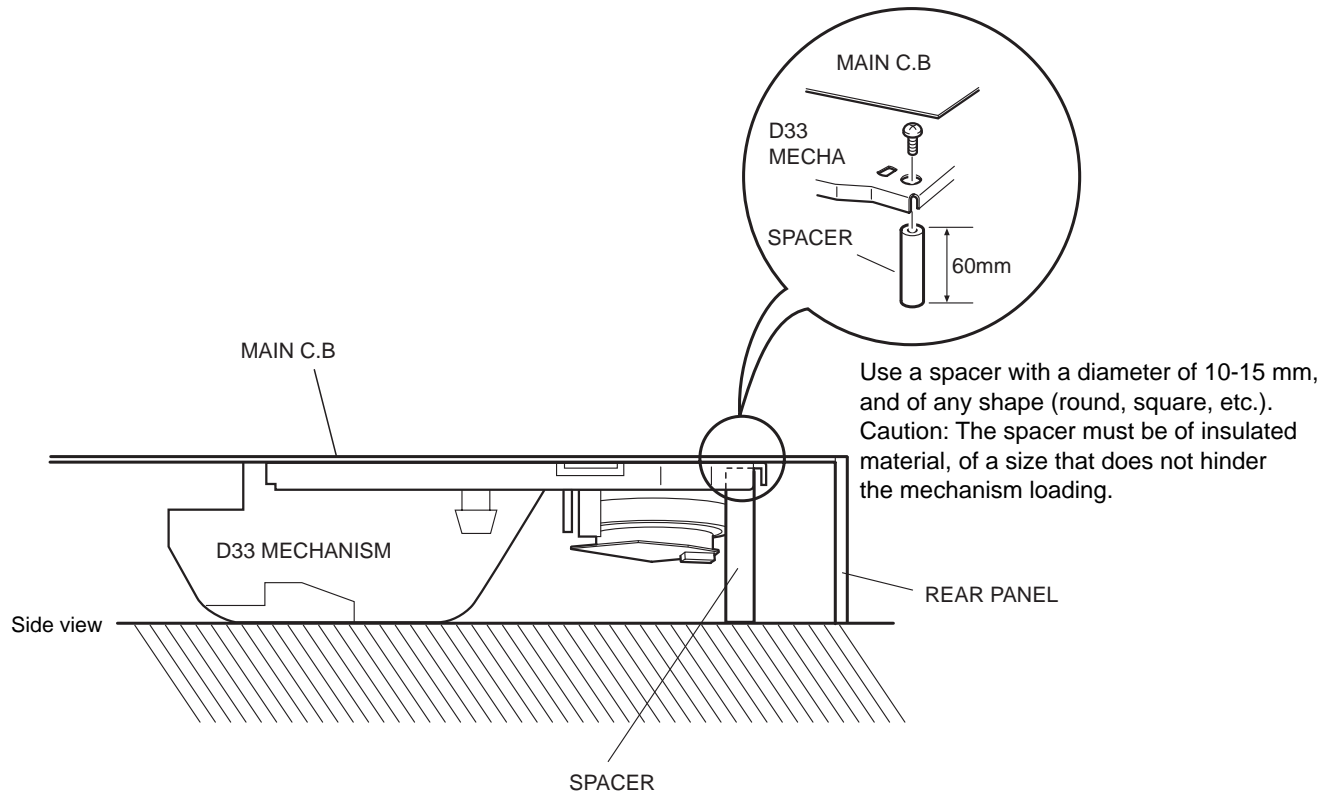


Fig. 4

SERVICE POSITION

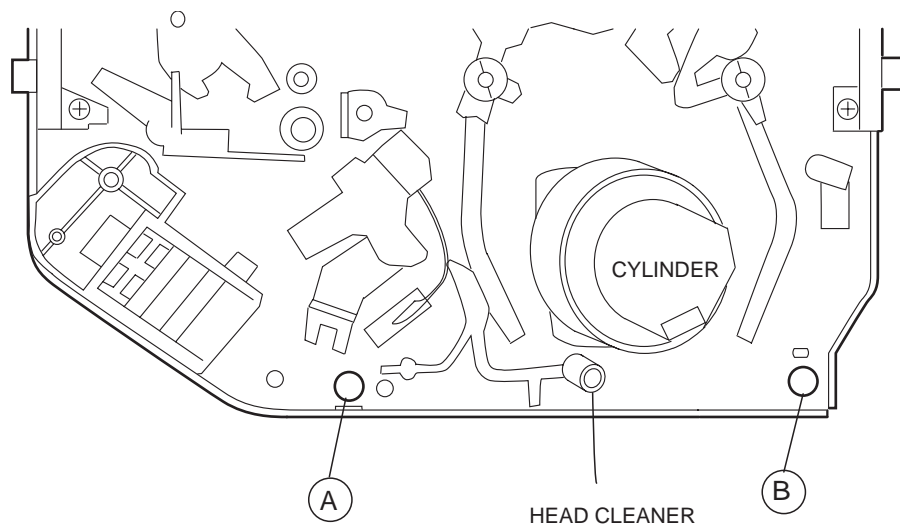
To set the mechanism to the service position in active status:

Insert a spacer as shown below: The service position can be set in the stable status without any defective contact.



Location

Install spacers at locations (A) and (B).



D33 Mechanism Top View

VCR TEST TAPE INTERCHANGEABILITY TABLE

There are two types of the new alignment tape CH-1B (for NTSC) and CH-2 (for PAL). On each tape four signals (1)-(4) are recorded for the times and in the order shown below.

(1) : 8min. → (2) : 2min. → (3) : 5min. → (4) : 5min.

The TTV-MP1 (for M-PAL), TTV-MS1 (for MESECAM) and TTV-S1 (for SECAM) alignment tapes have the same contents as the previous tapes.

Method	Now in use TYPE		New TYPE		Application
	Model	Contents *1	Model	Contents *1	
NTSC	TTV-N1	NTSC, Color bar, 1 kHz, SP	CH-1B(2)	NTSC, Stairsteps, 1 kHz, SP	PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-NS1	NTSC, Color bar, 1 kHz, SP	No Changed.		For S-VHS (SQPB) check
	TTV-N1E	NTSC, Color bar, 1 kHz, EP	CH-1B(4) *2	NTSC, Color bar, 1 kHz, EP	Switching position ADJ.
	TTV-NS6E	NTSC, Color bar, No sound, EP	No Changed.		For S-VHS (SQPB) check
	TTV-N2	NTSC, Stairsteps, 7 kHz, SP	CH-1B(1)	NTSC, Stairsteps, 7 kHz, SP	Head ACE Azimuth ADJ.
	TTV-N12 (SCV-1998)	NTSC, Color bar, 1 kHz, SP	CH-1B(4)	NTSC, Color bar, 1 kHz, EP	FM Envelope ADJ. X-Value ADJ.
	TTV-N6 (TTV-N06T)	NTSC, Mono scope, 7 kHz, SP	No Changed.		For total picture quality check (resolution, etc)
	TTV-N7A	NTSC, Stairsteps, 1 kHz, SP, HiFi 400 Hz	CH-1B(3)	NTSC, Color bar, No sound SP, HiFi 400 Hz	HiFi Audio PB Level ADJ.
PAL	TTV-P1	PAL, Color bar, 1 kHz, SP	CH-2 (2) * 3	PAL, Stairsteps, 1 kHz, SP	Switching position ADJ. PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-P1L	PAL, Color bar, 1 kHz, LP	CH-2 (4)	PAL, Color bar, 1 kHz, LP	Switching position. (LP Model) FM Envelope ADJ. (LP Model) X-Value ADJ. (LP Model)
	TTV-P2	PAL, Stairsteps, 6 kHz, SP	CH-2 (1)	PAL, Stairsteps, 6 kHz, SP	HEAD ACE Azimuth ADJ. FM Envelope ADJ. (SP Model) X-Value ADJ. (SP Model)
	TTV-P6 (TTV-N06T)	PAL, Monoscope, 6 kHz, SP	No Changed.		For total picture quality check (resolution, etc)
	TTV-P7	PAL, Stairsteps, 1 kHz, SP, HiFi 1 kHz	CH-2 (3)	PAL, Color bar, No sound SP, HiFi400 Hz	HiFi Audio PB Level ADJ.
	TTV-P16	PAL, Color bar, 400 Hz, SP, HiFi 1 kHz	No Changed.		FM Filter ADJ.

* 1. Described in the order of color format. video signal. linear audio. tape speed and Hi-Fi audio.

* 2. Use CH-1B (1)-(3) with models used exclusively in the SP mode.

* 3. Use CH-2 (3) and (4) when it is necessary to observe the chroma signal.

ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

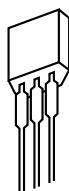
REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C119	87-010-408-040		CAP,E 47UF-50V
	SI-SS4-310-00A	IC,KA431AZ		C120	87-010-387-010		CAP,E 470UF-25V KME
	SI-SK6-153-00A	IC,STR-G6153T 5P		C121	87-010-387-080		CAP,E 470UF-25V
▲	S2-309-024-040	SENSOR LTV-817B PHOTO COU		C123	87-010-078-080		CAP,E 47M-6.3V
▲	S6-570-62B-000	SENSOR PC123Y		C124	87-010-552-040		CAP,E 22-16V
	SI-KE4-310-00A	IC,KIA431 3P		C151	87-015-698-080		CAP,E 4.7-50V
				C152	87-015-698-080		CAP,E 4.7-50V
	SI-T01-238-00A	IC,TA1238N		C153	87-015-698-080		CAP,E 4.7-50V
	SI-SA7-159-10A	IC,LA71591M		C156	87-015-681-080		CAP,E 10-16V
	SI-GS3-977-57B	IC,GMS3977RAA57F		C157	87-015-681-080		CAP,E 10-16V
	SI-HI3-977-17A	IC,HD3977RC17F					
	SI-SS3-082-00A	IC,KA3082		C159	87-015-681-080		CAP,E 10-16V
				C201	87-010-402-040		CAP,E 2.2-50V
	SI-AL2-416-00B	IC,AT24C16-10PC		C203	87-010-400-080		CAP,E 0.47-50V
	SI-SS7-531-00A	IC,KA7531Z		C206	87-010-400-080		CAP,E 0.47-50V
	SI-KE7-031-00A	IC,KIA7031P		C208	87-015-681-080		CAP,E 10-16V
	SI-SS7-542-00A	IC,KA7542Z					
	87-001-196-010	IC,KIA7042P		C210	87-010-078-080		CAP,E 47M-6.3V
				C213	87-010-402-040		CAP,E 2.2-50V
	87-A20-281-010	IC,MN12510		C303	87-015-695-080		CAP,E 1.0-50V
	87-A21-261-010	IC,MSP3417D		C304	87-016-088-040		CAP,E 220-6.3V
	SI-SA7-479-30A	IC,LC74793		C310	87-015-698-080		CAP,E 4.7-50V
	SI-PH9-605-00A	IC,TDA9605H					
	SI-RH7-635-00A	IC,BH7635S		C315	87-015-681-080		CAP,E 10-16V
TRANSISTOR				C316	87-015-681-080		CAP,E 10-16V
				C318	87-010-402-040		CAP,E 2.2-50V
	ST-R31-990-9AF	TR,KTC3199-BL		C320	SC-N10-50K-948		CAP,1UF-50V
	ST-R10-300-9AE	TR,KRC103M		C322	87-010-078-080		CAP,E 47M-6.3V
	ST-R32-030-9AA	TR,KTC3203-Y		C323	87-010-078-080		CAP,E 47M-6.3V
	S7-A30-293-010	TR,KTC2804-Y		C325	SC-N10-50K-948		CAP,1UF-50V
	ST-R31-980-9AC	TR,KTC3198-TP-BL		C326	87-015-681-080		CAP,E 10-16V
				C327	SC-N10-50K-948		CAP,1UF-50V
				C331	87-016-088-040		CAP,E 220-6.3V
	S3-1KR-A10-3M0	TR,KRA103M-TP					
	ST-R70-900-9AE	TR,KSA709C-Y		C334	87-016-088-040		CAP,E 220-6.3V
	ST-R12-680-9BA	TR,KTA1268-BL		C337	87-015-698-080		CAP,E 4.7-50V
	ST-R12-730-9AA	TR,KTA1273-TP-Y		C339	87-015-698-080		CAP,E 4.7-50V
	SK-RC1-01M-000	TR,KRC101M		C346	87-016-088-040		CAP,E 220-6.3V
				C348	87-015-695-080		CAP,E 1.0-50V
	ST-R12-670-9AC	TR,KTA1267-GR					
DIODE				C354	87-016-088-040		CAP,E 220-6.3V
				C358	87-015-695-080		CAP,E 1.0-50V
	SD-D01-000-9AC	DIODE,EU01W		C401	87-010-078-080		CAP,E 47M-6.3V
	87-020-465-080	DIODE,1SS133		C405	87-015-681-080		CAP,E 10-16V
	87-017-011-080	DIODE,IN4003A		C406	87-015-681-080		CAP,E 10-16V
	83-NEG-677-080	DIODE,MTZ5.6B					
	87-070-173-010	DIODE,S1WBA60		C415	87-010-552-040		CAP,E 22-16V
				C420	87-010-408-040		CAP,E 47UF-50V
	SD-D01-000-9CA	DIODE,EG01CW		C423	87-015-698-080		CAP,E 4.7-50V
	87-A40-284-080	DIODE,ERA22-10		C466	87-010-403-040		CAP,E 3.3-50V
	87-020-215-010	DIODE,ERC81-004L22		C4A1	87-010-552-040		CAP,E 22-16V
	SD-R18-020-9AA	DIODE,ERA18-02KFRB					
	87-070-112-060	DIODE,RU4YX-LF		C500	87-016-455-080		CAP,E 470UF-6.3V
				C502	87-010-078-080		CAP,E 47M-6.3V
	87-A40-345-080	ZENER,MTZ10-C		C504	87-016-088-040		CAP,E 220-6.3V
	SM-TZ6-8CT-000	ZENER,MTZ6.8C		C505	87-010-078-080		CAP,E 47M-6.3V
	83-NEG-678-080	ZENER,MTZ6.2B		C524	87-010-265-080		CAP,E 33-16V
	87-002-743-080	ZENER,MTZ33B					
	SD-Z51-000-9HA	ZENER,MTZ5.1B 0.5W		C525	87-015-684-080		CAP,E 47-16V
				C526	87-016-130-080		CAP,47-25V
	SD-Z13-000-9AA	ZENER,MTZ13A		C530	87-015-681-080		CAP,E 10-16V
				C534	87-015-698-080		CAP,E 4.7-50V
				C535	87-015-698-080		CAP,E 4.7-50V
MAIN C.B				C541	87-015-698-080		CAP,E 4.7-50V
▲	C101	S6-240-88F-000	CAP,0.1UF-275V	C546	87-015-684-080		CAP,E 47-16V
▲	C102	S6-240-88F-000	CAP,0.1UF-275V	C561	87-010-078-080		CAP,E 47M-6.3V
	C103	S0-2TF-H68-0M0	CAP,E 68U-400V	C588	87-015-698-080		CAP,E 4.7-50V
▲	C105	87-016-375-010	CAP,0.01UF-630V	C5F7	87-010-078-080		CAP,E 47M-6.3V
▲	C106	S6-240-87B-000	CAP,100P-1KV				
				C5F8	87-010-078-080		CAP,E 47M-6.3V
	C109	87-010-982-040	CAP,E 33UF-25V	C701	87-015-698-080		CAP,E 4.7-50V
▲	C112	87-012-379-010	CAP,3300PF-400V	C702	87-015-681-080		CAP,E 10-16V
▲	C113	SA-1B3-0KH-2M0	CAP,220PF-400V	C703	87-015-681-080		CAP,E 10-16V
	C115	87-010-408-040	CAP,E 47UF-50V	C704	87-010-078-080		CAP,E 47M-6.3V
	C116	87-010-237-910	CAP,E 1000UF-16V				
				C706	87-016-577-080		CAP,E 470UF-16V
	C117	87-016-577-080	CAP,E 470UF-16V	C7S1	87-010-265-080		CAP,E 33-16V
	C118	87-010-248-080	CAP,E 220-10V	C7V1	87-015-684-080		CAP,E 47-16V
				C7V2	SC-N10-50K-948		CAP,1UF-50V
				C7V6	87-015-698-080		CAP,E 4.7-50V

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C7V7	87-015-695-080	CAP,E 1.0-50V		L902	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C7V8	87-015-695-080	CAP,E 1.0-50V		L904	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C806	87-015-698-080	CAP,E 4.7-50V		L905	S6-360-04C-000	COIL,BFS3550R2FD8	
C807	87-015-698-080	CAP,E 4.7-50V		L906	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C810	87-015-681-080	CAP,E 10-16V		L907	S6-360-04C-000	COIL,BFS3550R2FD8	
C811	87-015-681-080	CAP,E 10-16V		L911	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C813	87-015-681-080	CAP,E 10-16V		L912	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C814	87-015-681-080	CAP,E 10-16V		L914	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C815	87-015-681-080	CAP,E 10-16V		L916	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C816	87-015-681-080	CAP,E 10-16V		L924	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C817	87-015-681-080	CAP,E 10-16V		L926	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C818	87-015-698-080	CAP,E 4.7-50V		L941	87-005-696-080	COIL,100UH	
C819	87-015-681-080	CAP,E 10-16V		LD501	S9-31R-001-7A0	LED	
C821	87-015-684-080	CAP,E 47-16V		MS501	S6-00R-PY0-01B	SW,MMS00420ZMBO MIC	
C822	87-015-681-080	CAP,E 10-16V		P3D01	S5-612-34Y-000	CONN,6P	
C823	87-015-681-080	CAP,E 10-16V		P3D02	S6-30R-5S0-08E	CONN,6P	
C824	87-015-681-080	CAP,E 10-16V		P3D03	S5-612-51B-000	CONN,2P	
C825	87-015-684-080	CAP,E 47-16V		PM701	S6-724-43B-000	CONN,6P	
C827	87-015-681-080	CAP,E 10-16V		PM702	S5-618-43J-000	CONN,9P	
C828	87-015-684-080	CAP,E 47-16V		PMC01	S6-30R-2P0-05C	CONN,8P	
C832	87-010-078-080	CAP,E 47M-6.3V		PMD01	S5-612-34V-000	CONN,7P	
C835	87-010-400-080	CAP,E 0.47-50V		PMK01	S6-724-34B-000	CONN,5P	
C902	87-016-577-080	CAP,E 470UF-16V		PMK02	S5-618-43J-000	CONN,10P	
C912	87-016-577-080	CAP,E 470UF-16V		PML01	S6-30R-2S0-11A	CONN,2P	
C941	87-015-681-080	CAP,E 10-16V		PML01	S6-30R-2S0-11A	CONN,2P	
C942	87-010-132-080	CAP,E 1.0-50V		△PW101	S5-612-92B-000	CONN,2P	
C948	87-015-681-080	CAP,E 10-16V		R101	S6-140-07R-000	RES,2.7-2W	
C950	87-015-681-080	CAP,E 10-16V		R102	SR-S10-03K-619	RES,100K-2W	
C951	87-015-684-080	CAP,E 47-16V		R109	SR-S03-50K-619	RES,0.35-2W	
CS501	S6-00R-DB0-04B	SW SPPB62042 5V		R/C5F1	S7-12R-293-8GA	REMOCON RECEIVER	
CS501	S6-00R-DB0-04C	SW,MPU10252MLB4 MIC		RS501	S5-00R-AB0-02A	SENSOR GP1S566	
DIG5F1	S3-02R-1N0-03A	DH 9MT168GK		RS502	S5-00R-AB0-02A	SENSOR GP1S566	
DIG5F1	S3-02R-2N0-03A	DH SVV09MM14		△T101	S6-420-23M-000	TRANS EER2828	
ES501	S9-31R-001-6A0	SENSOR END		TL401	S6-330-32K-000	COIL,OSC BIAS 1CHIP 5V	
ES502	S9-31R-001-6A0	SENSOR END		TU701	S7-00R-P3L-02A	TUNER TADC-S003D LGC&N BG SECA	
△F101	S5-850-11T-000	FUSE,1600MA 250V		VR501	S6-130-32W-000	SFR,RH0638CJ5R(220K)	
△F101	S5-850-11C-000	FUSE,T 1.6A 250V		X201	S2-02R-142-8BE	X'TAL,4.286230MHZ	
△F103	87-001-196-010	ICP-N10 T104		X201	S2-02R-142-8AC	X'TAL,4.286M 16PF	
△FH01	S5-860-08B-000	FUSE CLUMP		X301	S2-02R-144-3AD	X'TAL,4.433709M	
△FH02	S5-860-08B-000	FUSE CLUMP		X301	S2-02R-144-3AC	X'TAL,4.433709M	
JK901	S6-20R-M00-02A	JACK 42P		X301	S2-02R-144-3AE	X'TAL,4.433709MHZ 15PPM	
JK902	S5-720-36H-000	JK BJP		X501	S2-02R-310-01F	X'TAL,10.0000	
△L102	S6-161-45H-000	FILTER SHT LFS2020V4-04350		X501	S2-02R-310-01E	X'TAL,10.0000MHZ	
△L102	S6-161-45J-000	FL BUJEON V-04350		X502	S5-290-01B-000	X'TAL,32.768KHZ	
L103	S6-330-88G-000	COIL,CHOCK TP 5MM		X502	S5-290-01K-000	X'TAL,32.768KHZ	
L104	S6-330-88G-000	COIL,CHOCK TP 5MM		X503	S2-02R-317-71F	X'TAL,17.7344	
L105	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		X503	S2-02R-317-71E	X'TAL,17.734476MHZ	
L201	87-003-282-080	COIL,12 2.3-3.4-5		X5F1	S6-180-10B-000	X'TAL,4MHZ	
L301	87-005-196-080	COIL,10UH		X7V1	S2-02R-317-71F	X'TAL,17.7344	
L302	87-003-286-080	COIL,5UH 2.3-3.4-5		X7V1	S2-02R-317-71E	X'TAL,17.734476MHZ	
L303	87-003-148-080	INDUCTOR,33		NICAM C.B			
L304	87-005-696-080	COIL,100UH		C752	87-015-684-080	CAP,E 47-16V	
L307	87-005-696-080	COIL,100UH		C753	87-015-684-080	CAP,E 47-16V	
L309	87-005-696-080	COIL,100UH		C760	87-015-684-080	CAP,E 47-16V	
L401	87-003-145-080	INDUCTOR,8.2		C761	87-010-403-040	CAP,E 3.3-50V	
L402	87-003-129-080	INDUCTOR,6800		C763	87-015-681-080	CAP,E 10-16V	
L405	87-005-196-080	COIL,10UH		C765	87-015-684-080	CAP,E 47-16V	
L502	87-005-696-080	COIL,100UH		C773	87-015-681-080	CAP,E 10-16V	
L505	87-005-696-080	COIL,100UH		C774	87-015-681-080	CAP,E 10-16V	
L506	87-005-686-080	COIL,15UH		C775	87-015-681-080	CAP,E 10-16V	
L507	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		C776	87-015-681-080	CAP,E 10-16V	
L5S1	87-003-148-080	INDUCTOR,33		L752	87-005-696-080	COIL,100UH	
L701	87-005-696-080	COIL,100UH		L753	87-005-696-080	COIL,100UH	
L702	87-005-196-080	COIL,10UH		L754	87-003-129-080	INDUCTOR,6800	
L703	87-005-196-080	COIL,10UH		L755	87-003-129-080	INDUCTOR,6800	
L704	87-003-145-080	INDUCTOR,8.2		P7M51	S5-618-48D-000	CONN,6P	
L7V1	87-005-696-080	COIL,100UH		P7M52	S5-618-48F-000	CONN,9P	
L801	87-005-696-080	COIL,100UH		X751	S5-290-219-000	X'TAL 18.432MHZ	
L802	87-005-696-080	COIL,100UH					
L901	87-003-152-080	INDUCTOR,100M 2.3-3.4-5					

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
FRONT-1 C.B			
PMK02	S5-618-44J-000		CONN,10P
SW5A1	S5-562-82C-000		SW,SKQHQED ALPS 5MM
SW5A2	S5-562-82C-000		SW,SKQHQED ALPS 5MM
SW5A3	S5-562-82C-000		SW,SKQHQED ALPS 5MM
SW5A4	S5-562-82C-000		SW,SKQHQED ALPS 5MM
SW5A5	S5-562-82C-000		SW,SKQHQED ALPS 5MM
SW5A6	S5-562-82C-000		SW,SKQHQED ALPS 5MM

FRONT-2 C.B			
LD5A1	SD-L53-110-0AA		LED,SG5311 (GRN)
PMK01	S5-610-36D-000		CONN,5P
SW5A0	S5-562-82C-000		SW,SKQHQED ALPS 5MM
SW5A7	S5-562-82C-000		SW,SKQHQED ALPS 5MM
SW5A8	S5-562-82C-000		SW,SKQHQED ALPS 5MM
SW5A9	S5-562-82C-000		SW,SKQHQED ALPS 5MM

TRANSISTOR ILLUSTRATION



ECB

KRA103M
KRC101M
KRC103M
KTA1267
KTC3198
KTC3199



ECB

KSA709
KTA1268
KTC3203



ECB

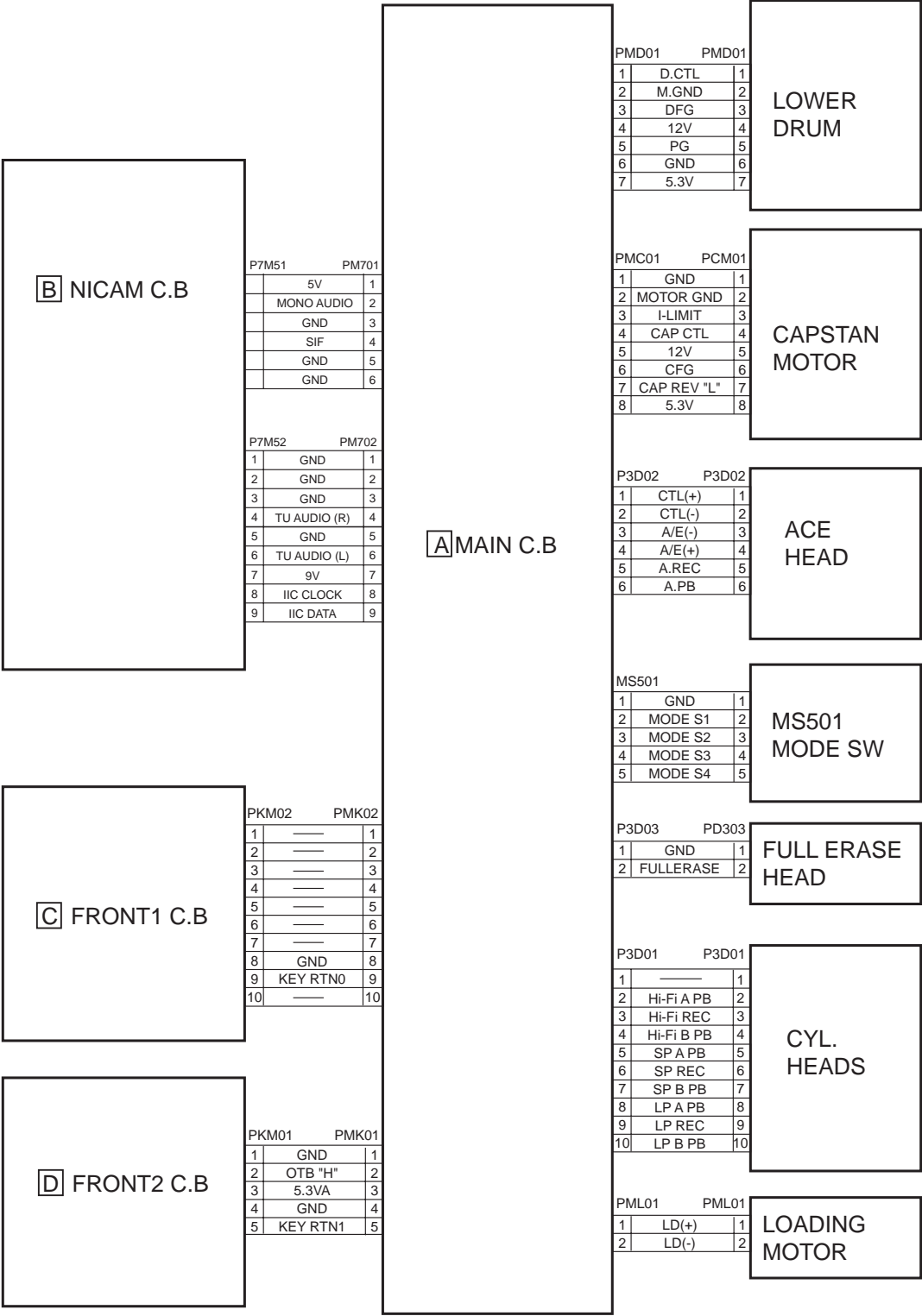
KTA1273



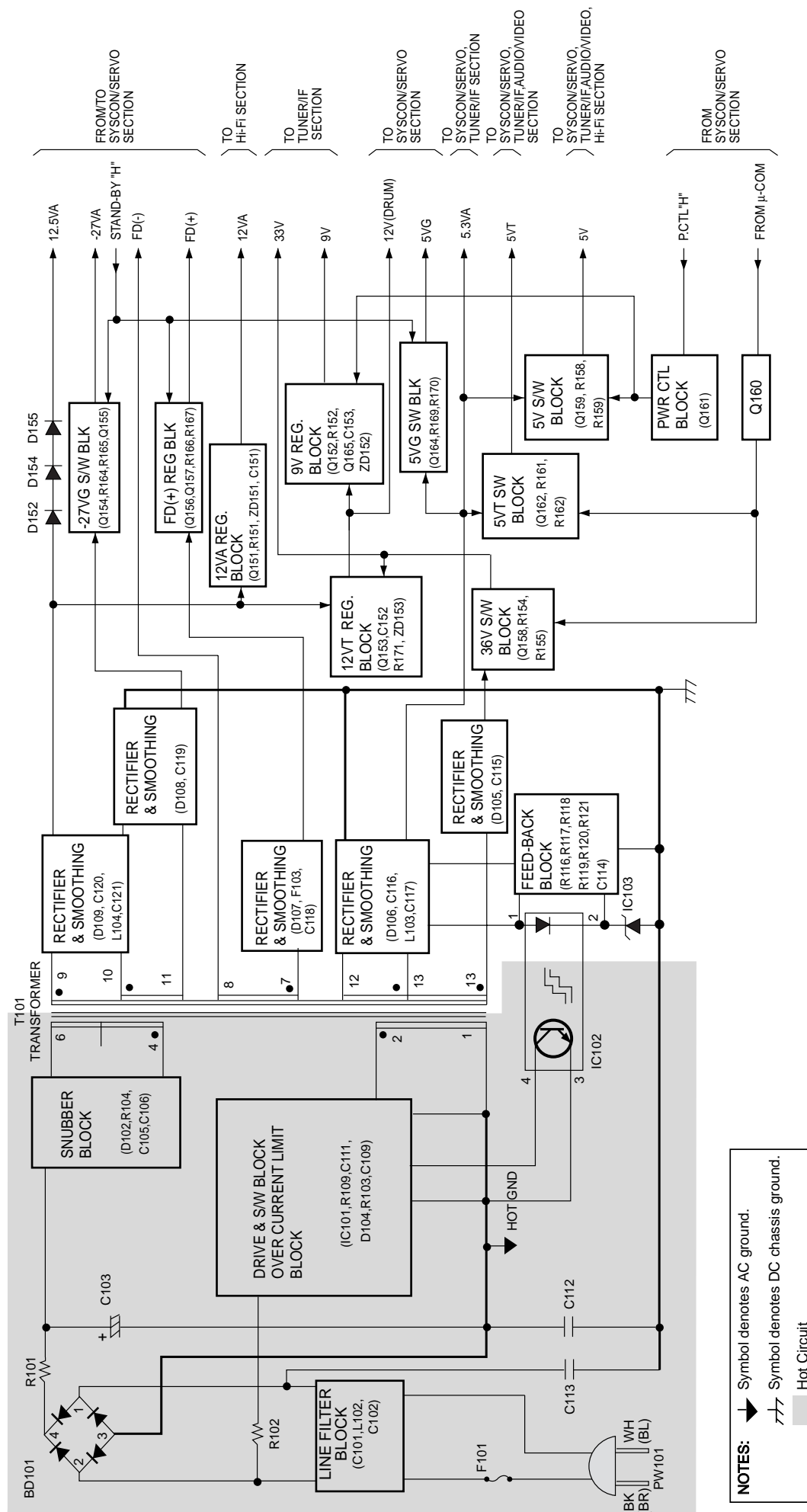
ECB

KTC2804

WIRE HARNESS DIAGRAM

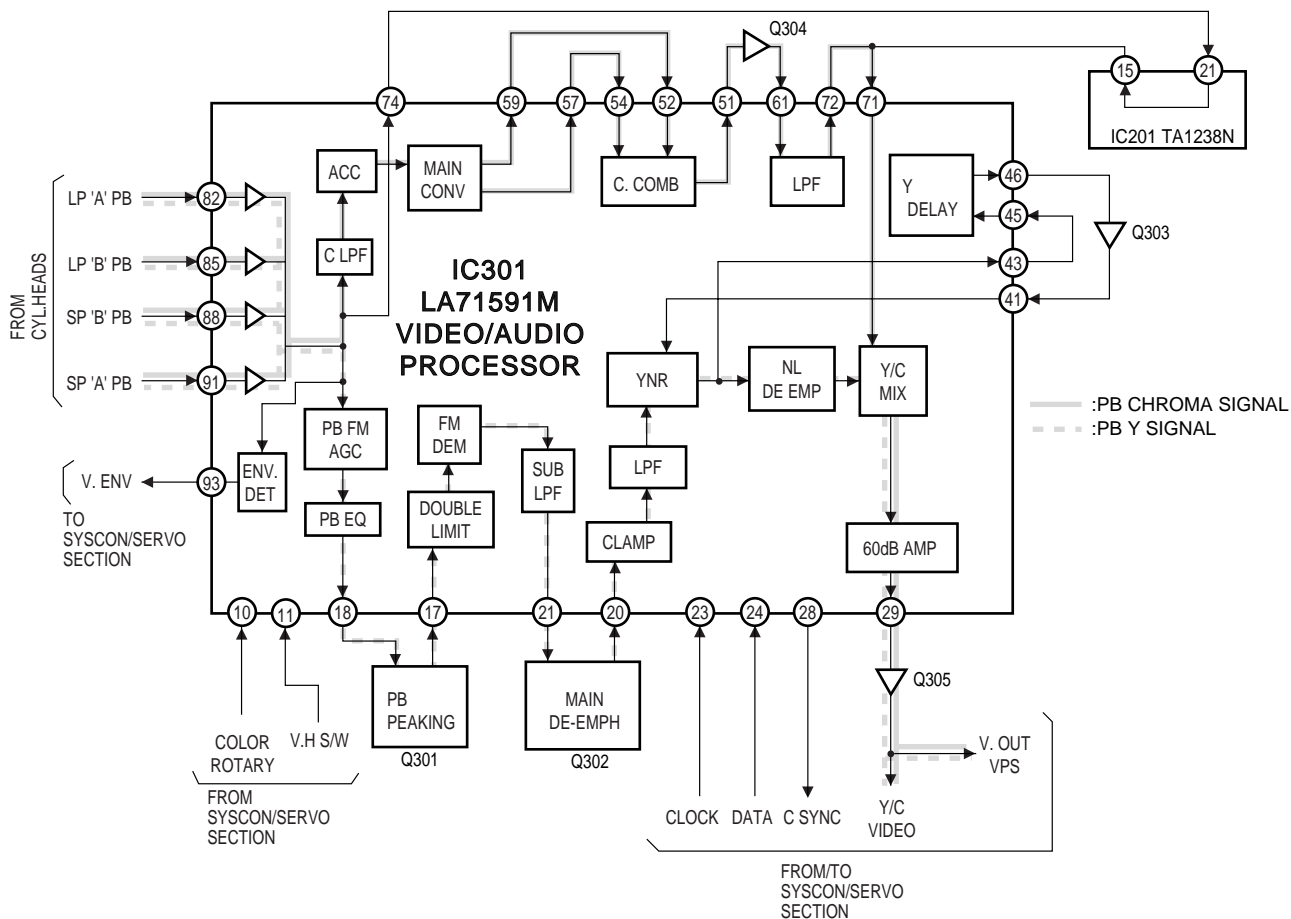


BLOCK DIAGRAM-1 (POWER SECTION)

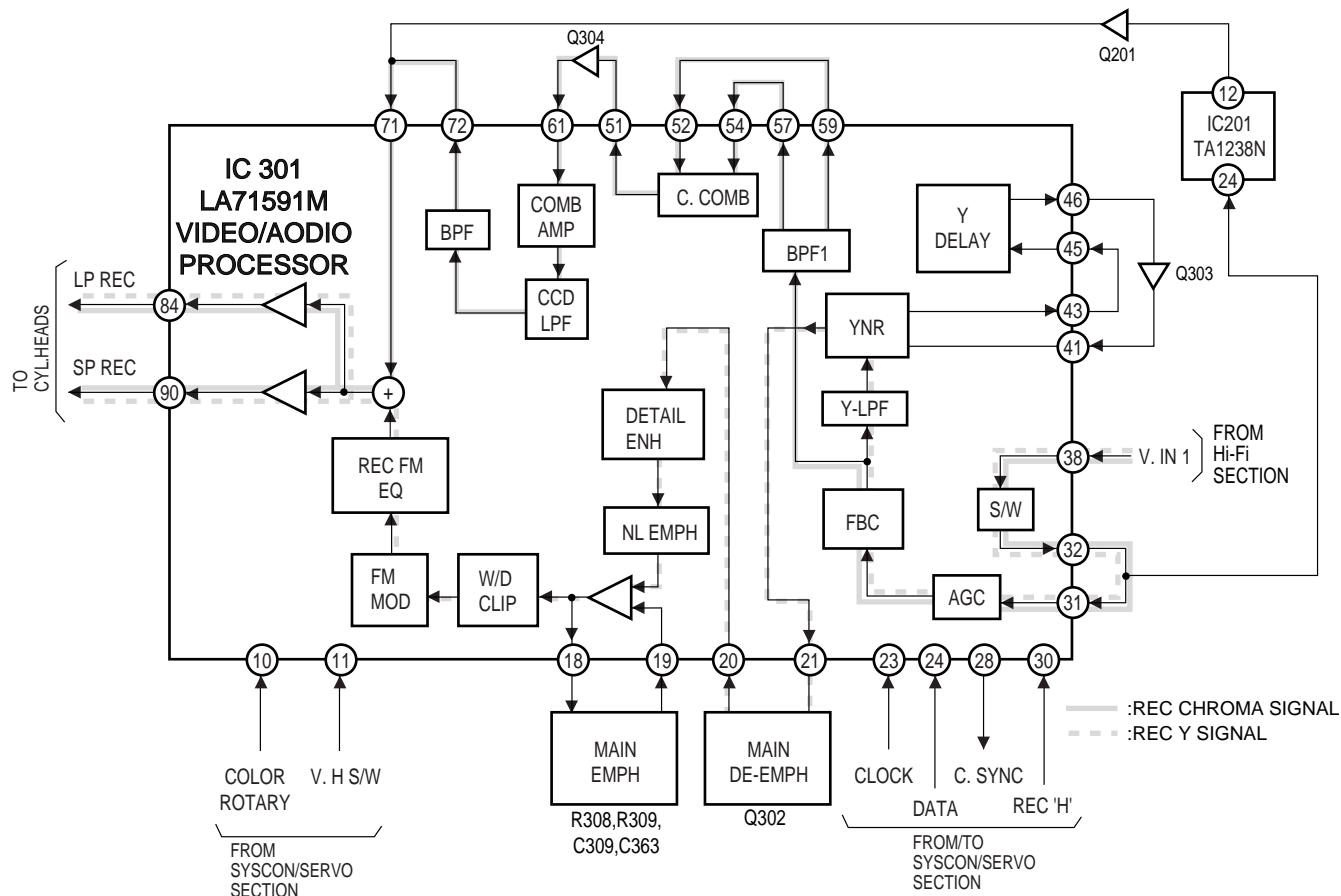


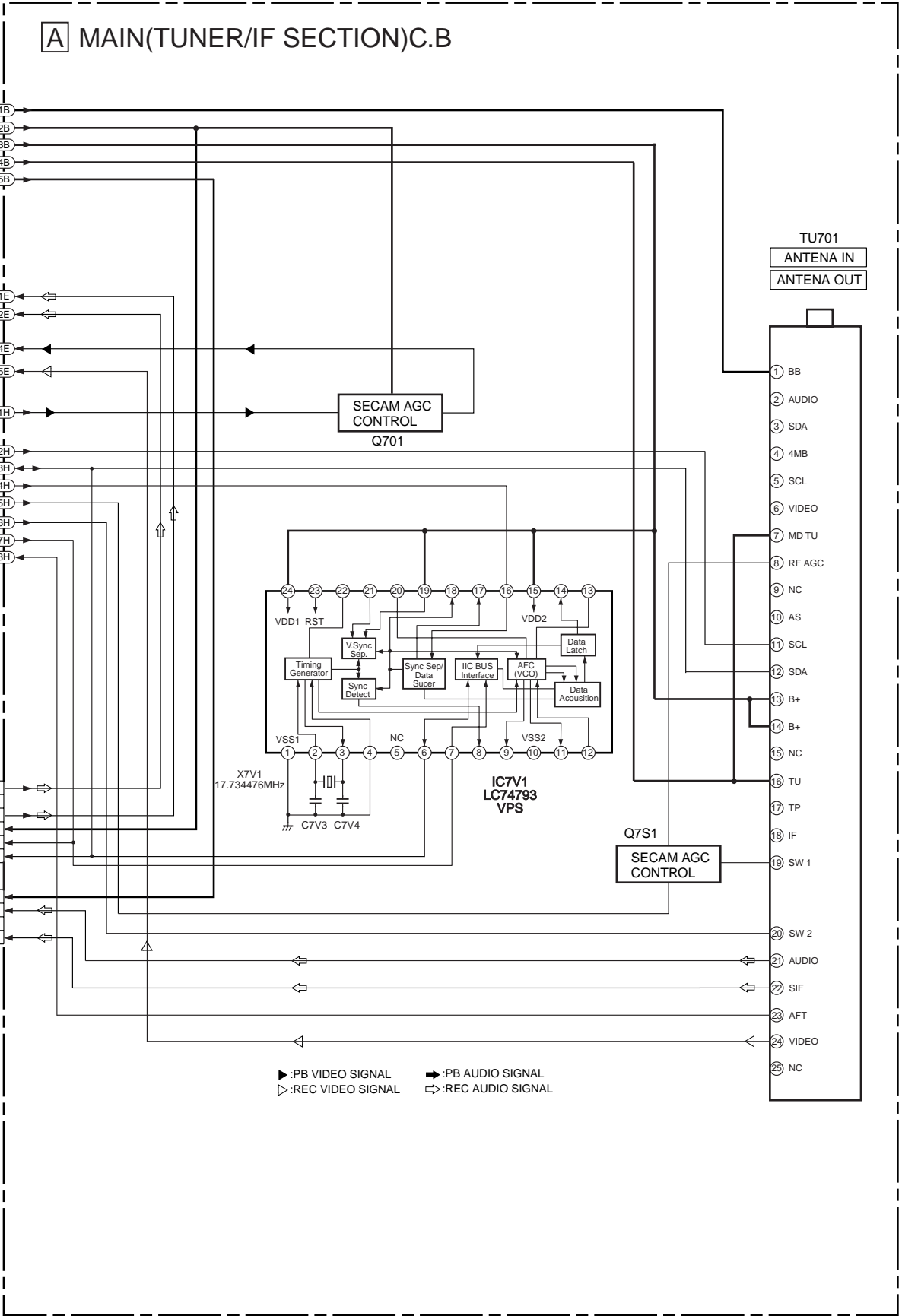
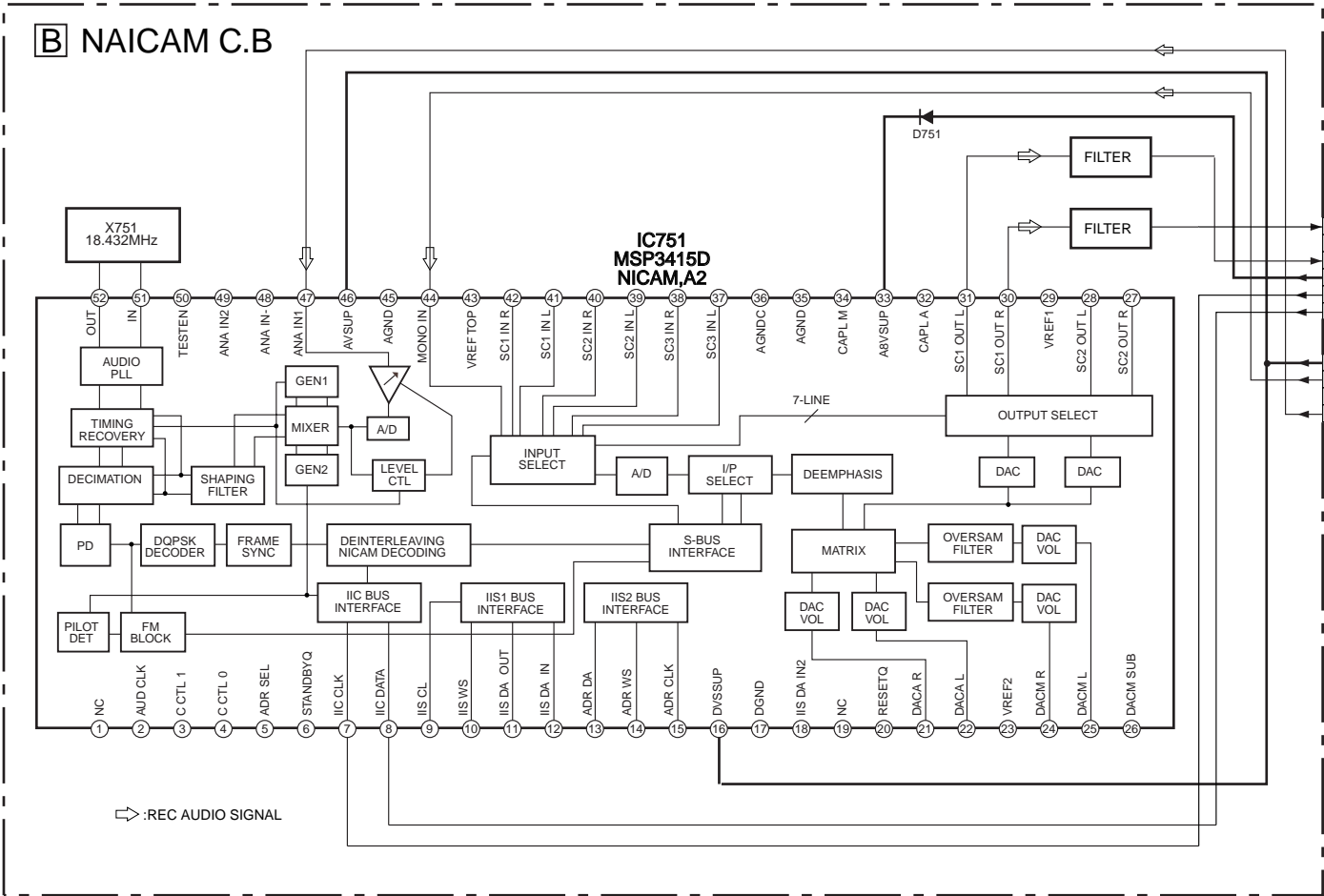
BLOCK DIAGRAM-2 (VIDEO SECTION)

PB MODE

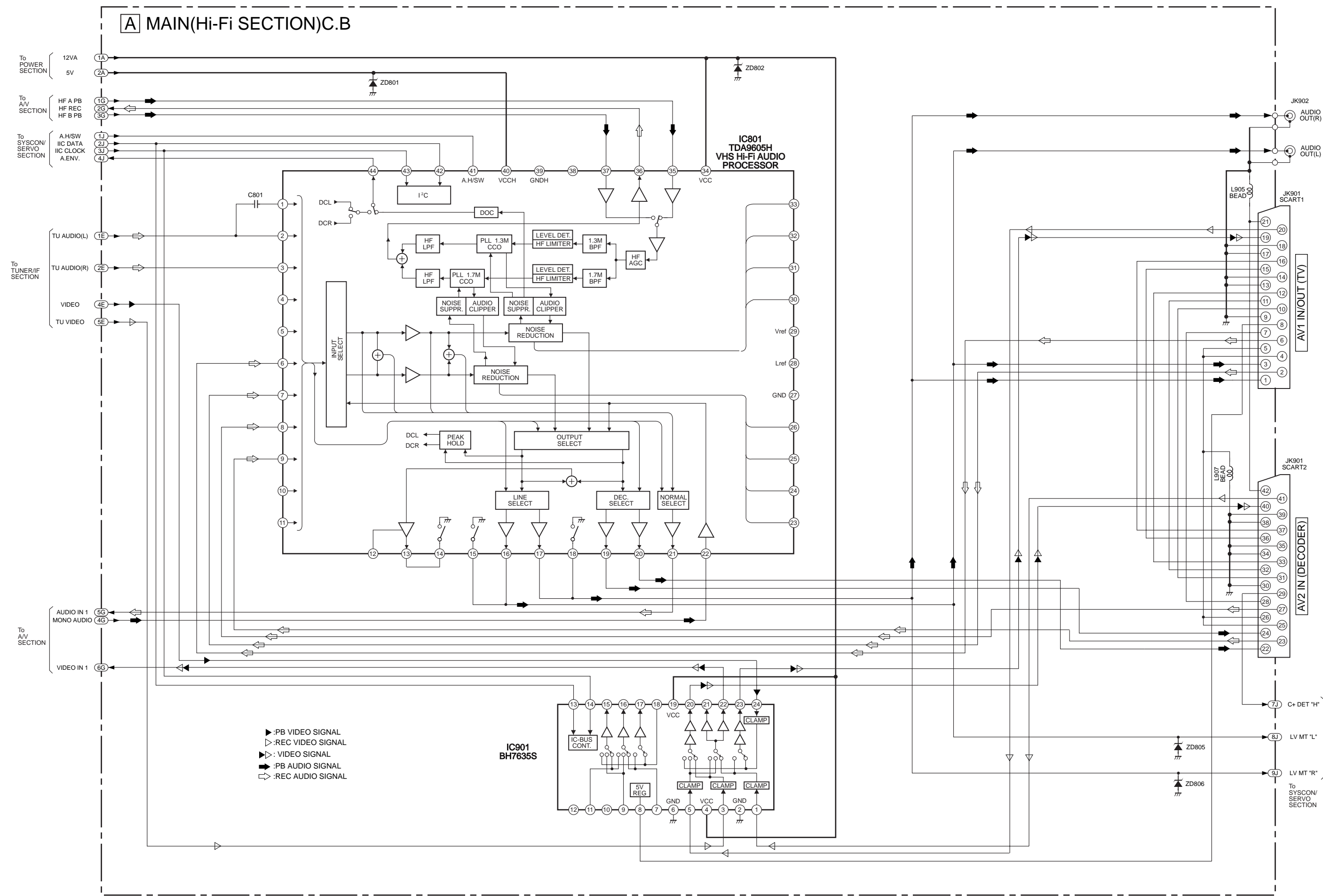


REC MODE

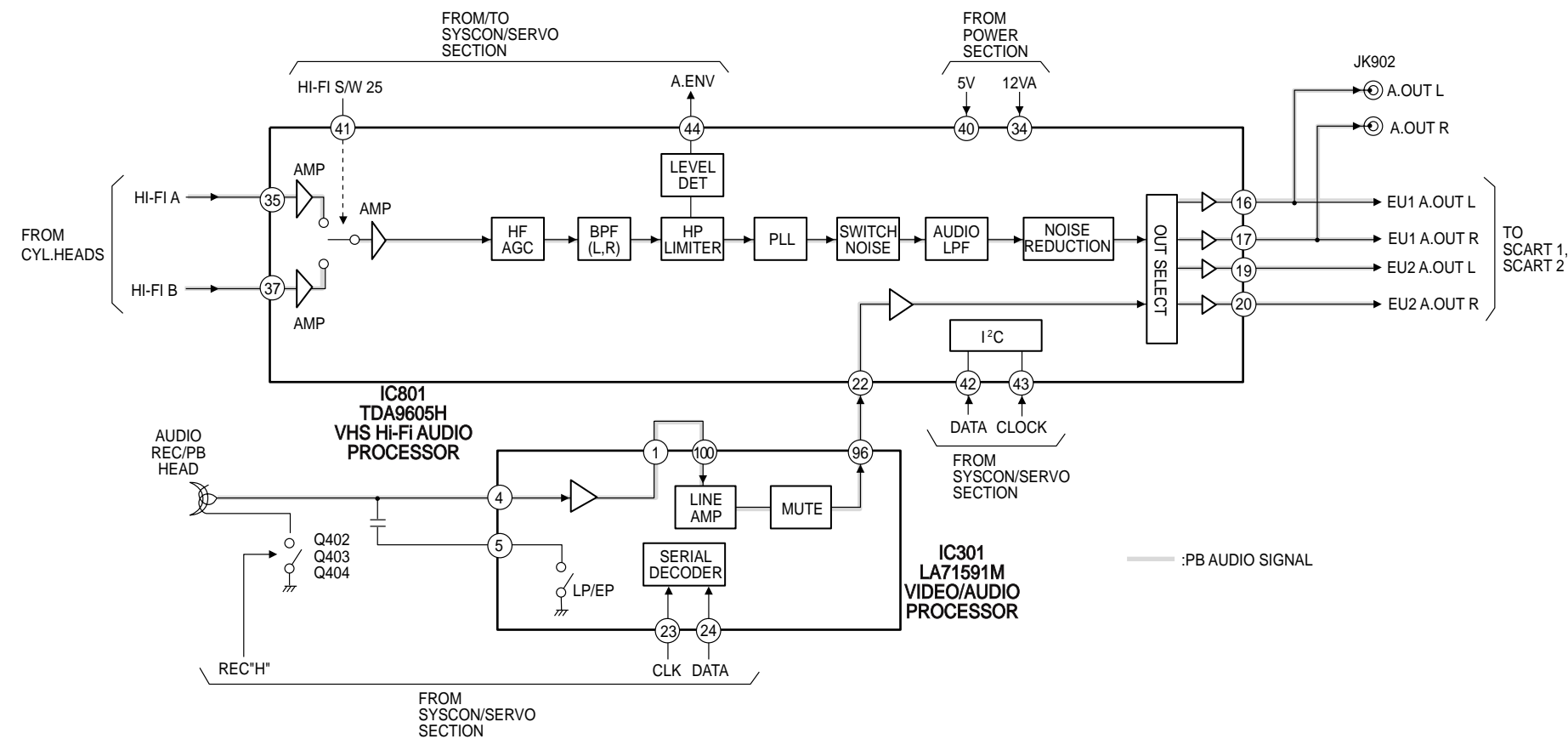




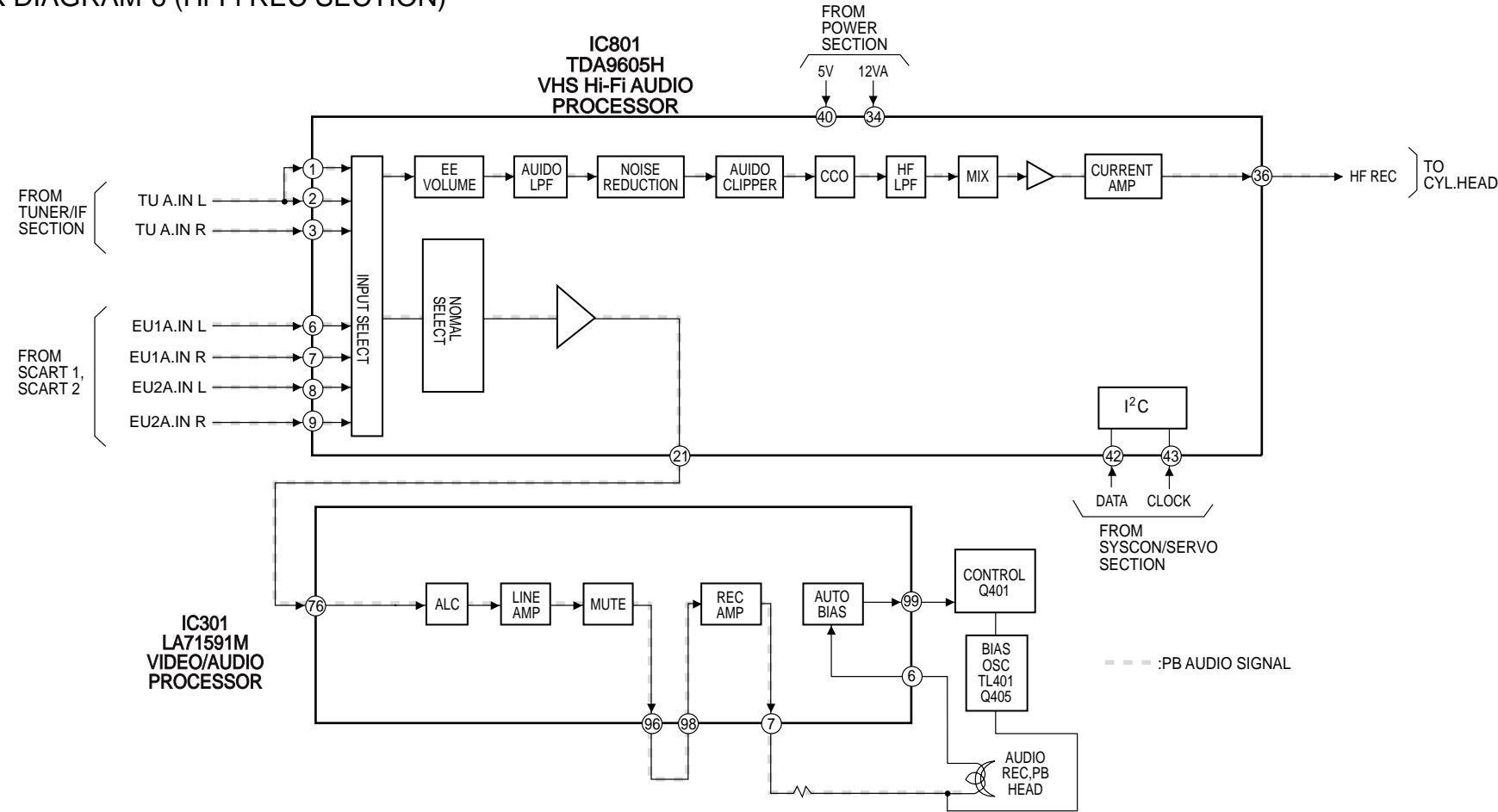
BLOCK DIAGRAM-4 (Hi-Fi/SCART SECTION)



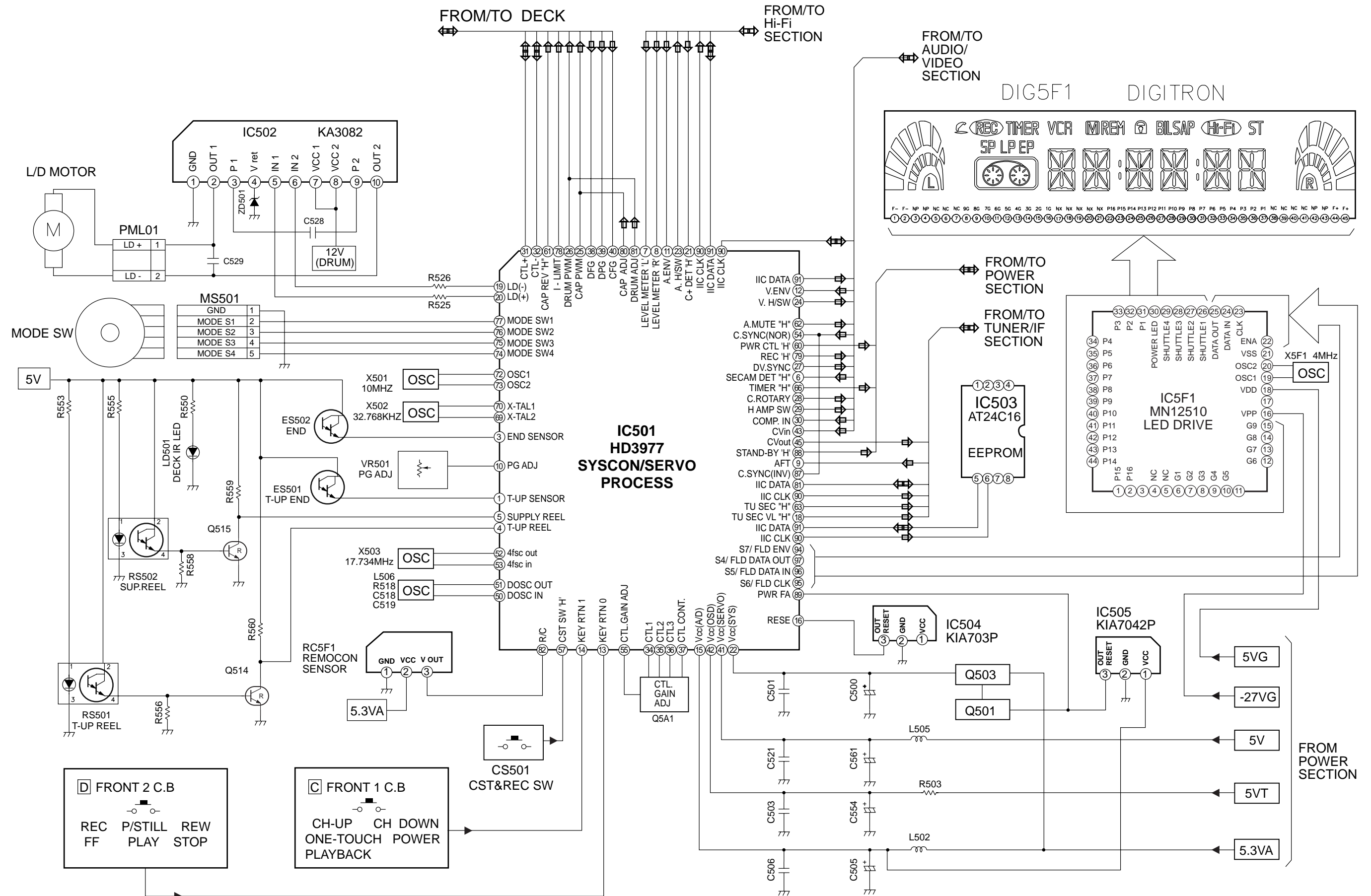
BLOCK DIAGRAM-5 (Hi-Fi PB SECTION)

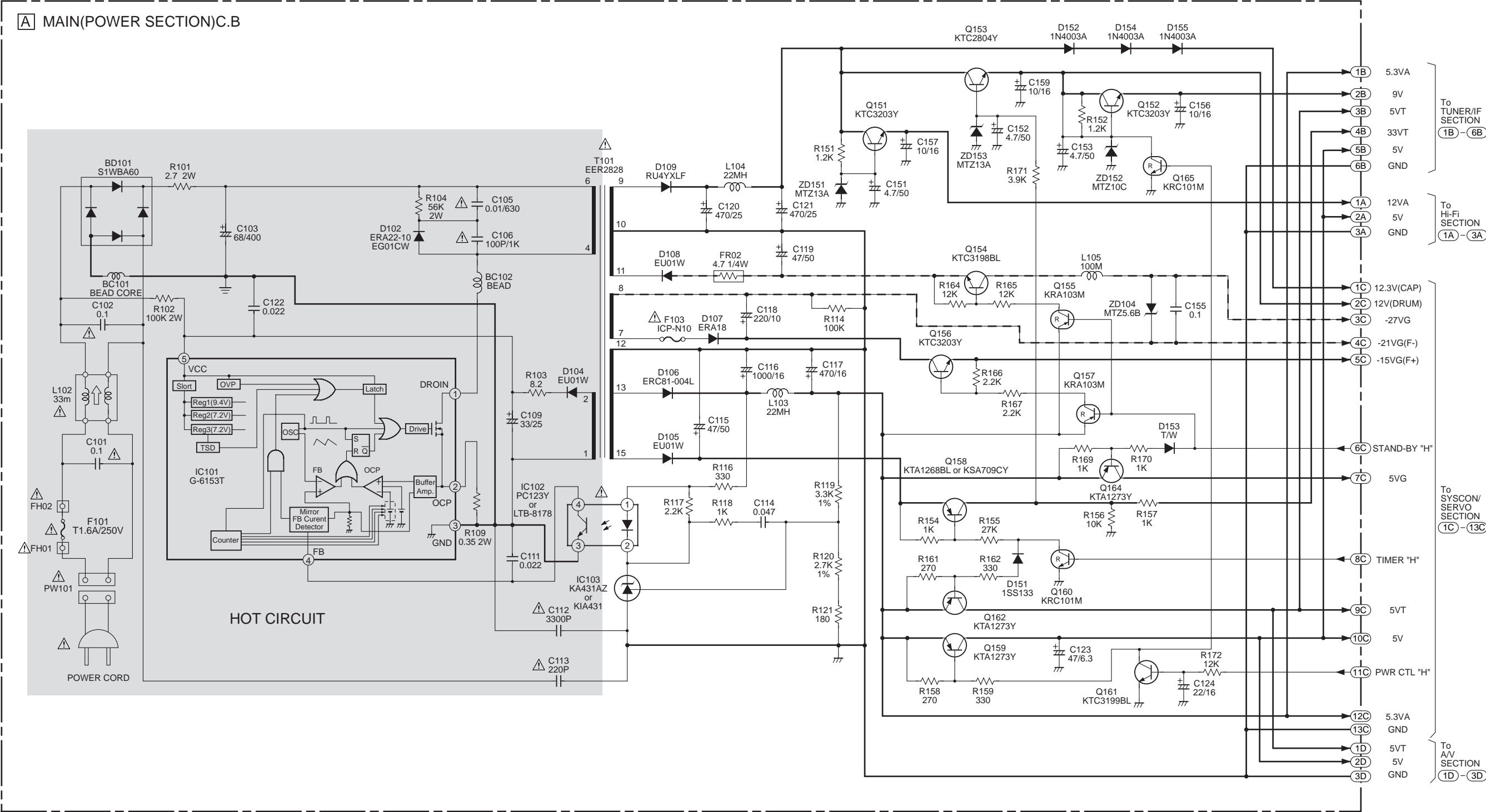


BLOCK DIAGRAM-6 (Hi-Fi REC SECTION)

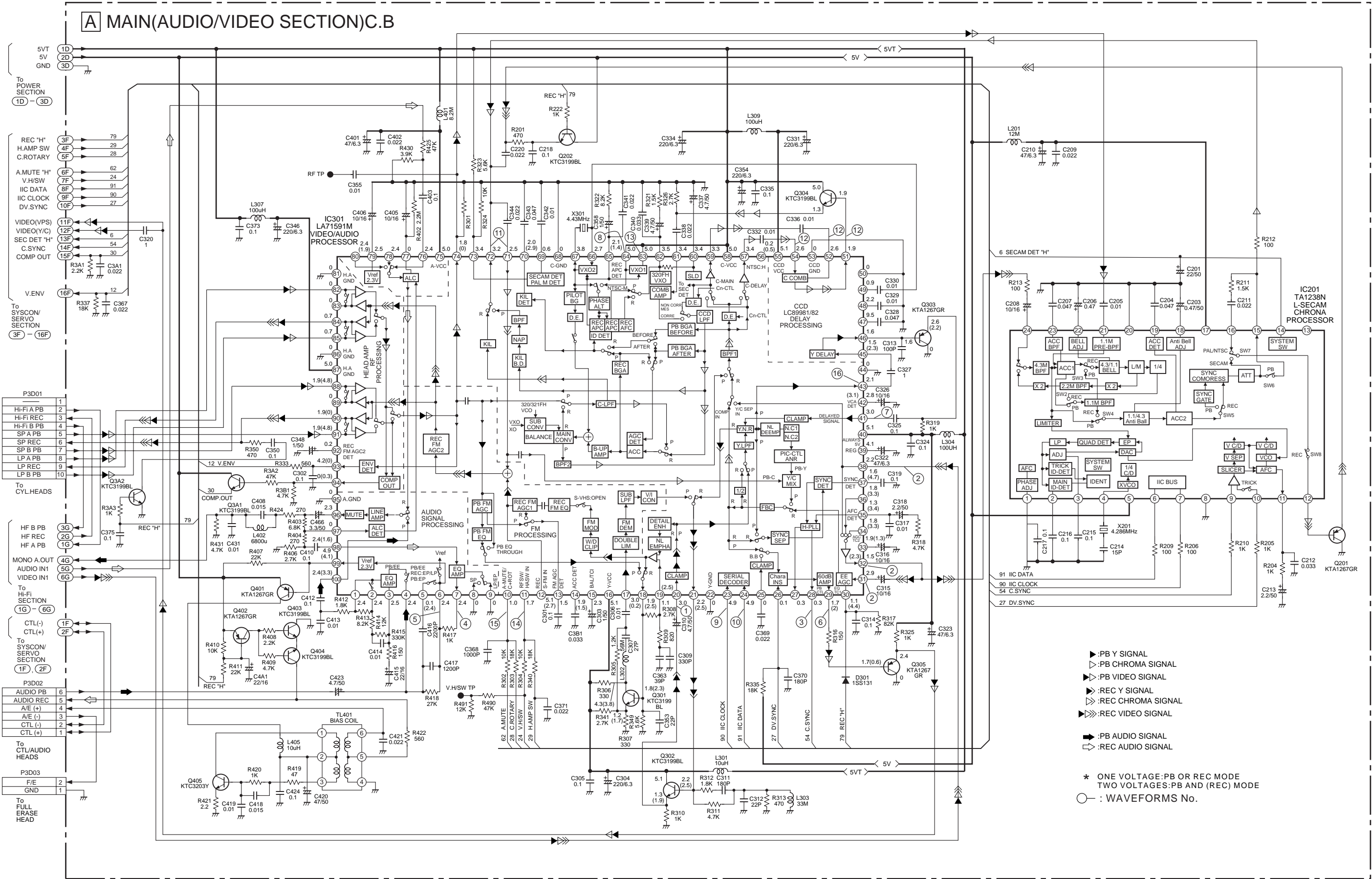


BLOCK DIAGRAM-6 (SYSTEM CONTROL SECTION)





SCHEMATIC DIAGRAM-2 (AUDIO/VIDEO SECTION)



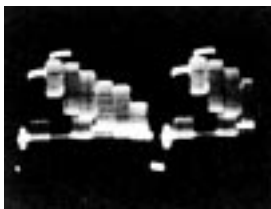
WAVEFORM-1 (VIDEO SECTION)

①



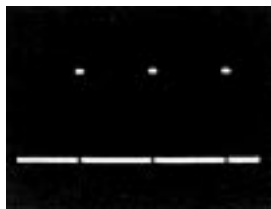
IC301 Pin ②⑩
PBmode
500mvp-p

②



IC301 Pin ③⑧, ③②, ③①
Video in
1Vp-p

③



IC301 Pin ②⑧
PB/REC mode
4.2Vp-p

④



IC301 Pin ⑦
REC mode
1.4Vp-p

⑤



IC301 Pin ⑥
REC mode
2.2Vp-p

⑥



IC301 Pin ②⑨
PB mode
2.1 Vp-p

⑦



IC301 Pin ④①
PB mode
400mVp-p

⑧



IC301 Pin ⑥④
PB mode
600mVp-p

⑨



IC301 Pin ②③
PB/REC mode
5Vp-p

⑩



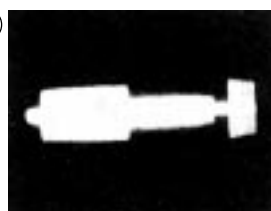
IC301 Pin ②④
PB/REC mode
5Vp-p

⑪



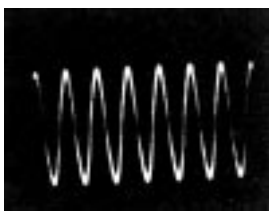
IC301 Pin ⑦①, ⑦②
REC mode
340mVp-p

⑫



IC301 Pin ⑤①, ⑤②, ⑤④
PB mode
300mVp-p

⑬



IC301 Pin ⑥③
PB mode
600mVp-p

⑭



IC301 Pin ⑦①
PB mode
3.2Vp-p

⑮



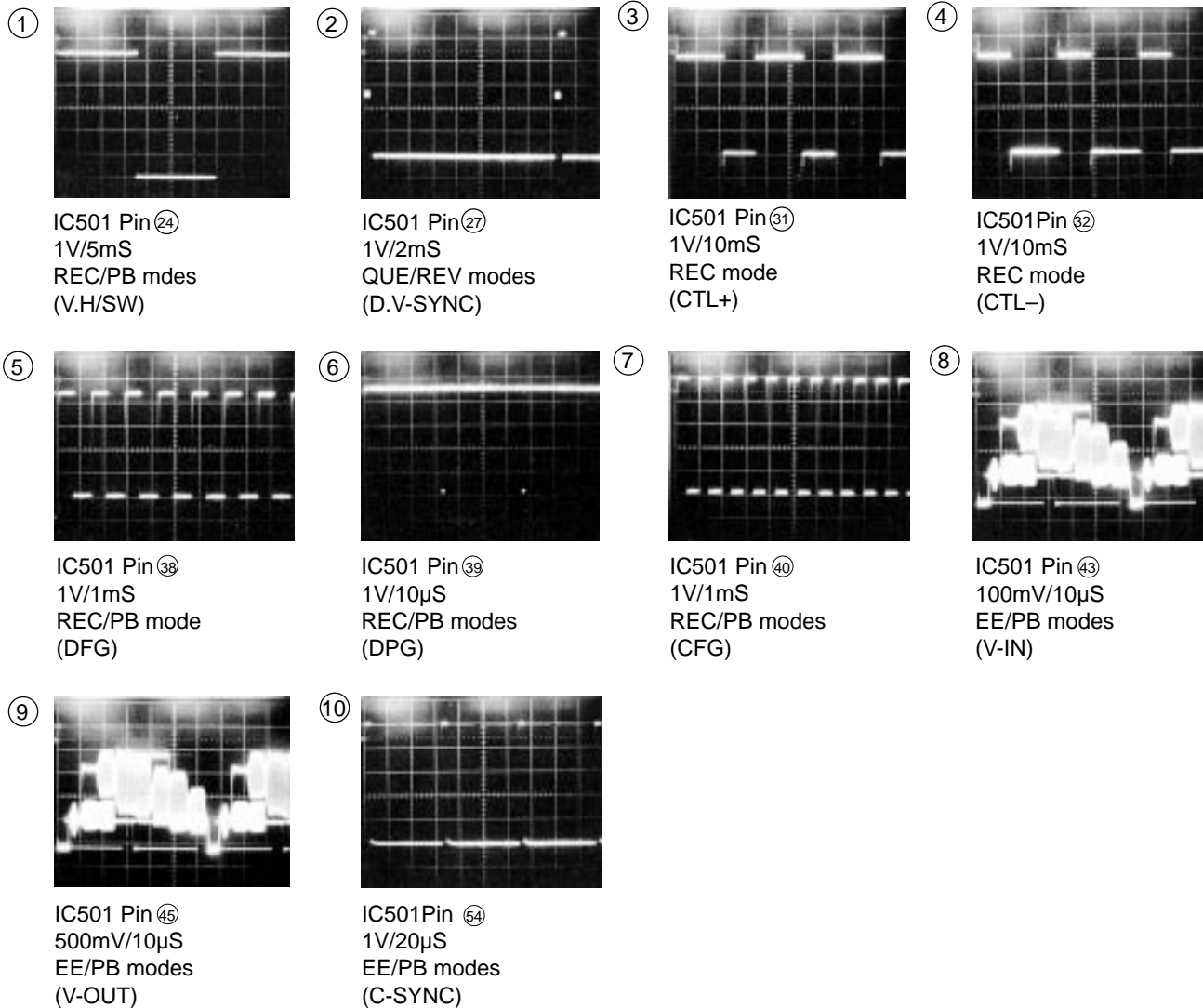
IC301 Pin ⑩
PB mode
1.8Vp-p

⑯

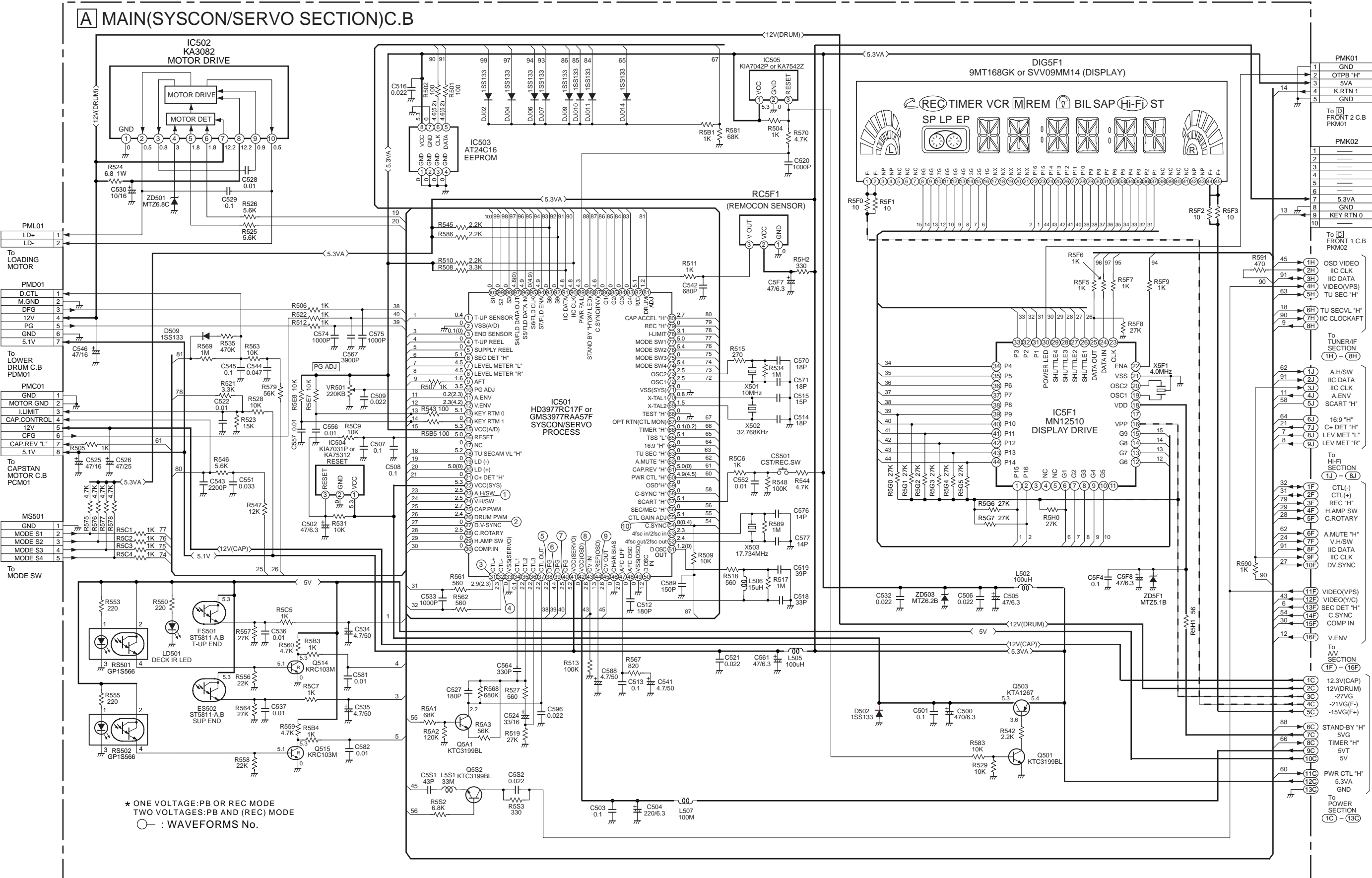


IC301 Pin ④③
PB mode
400mVp-p

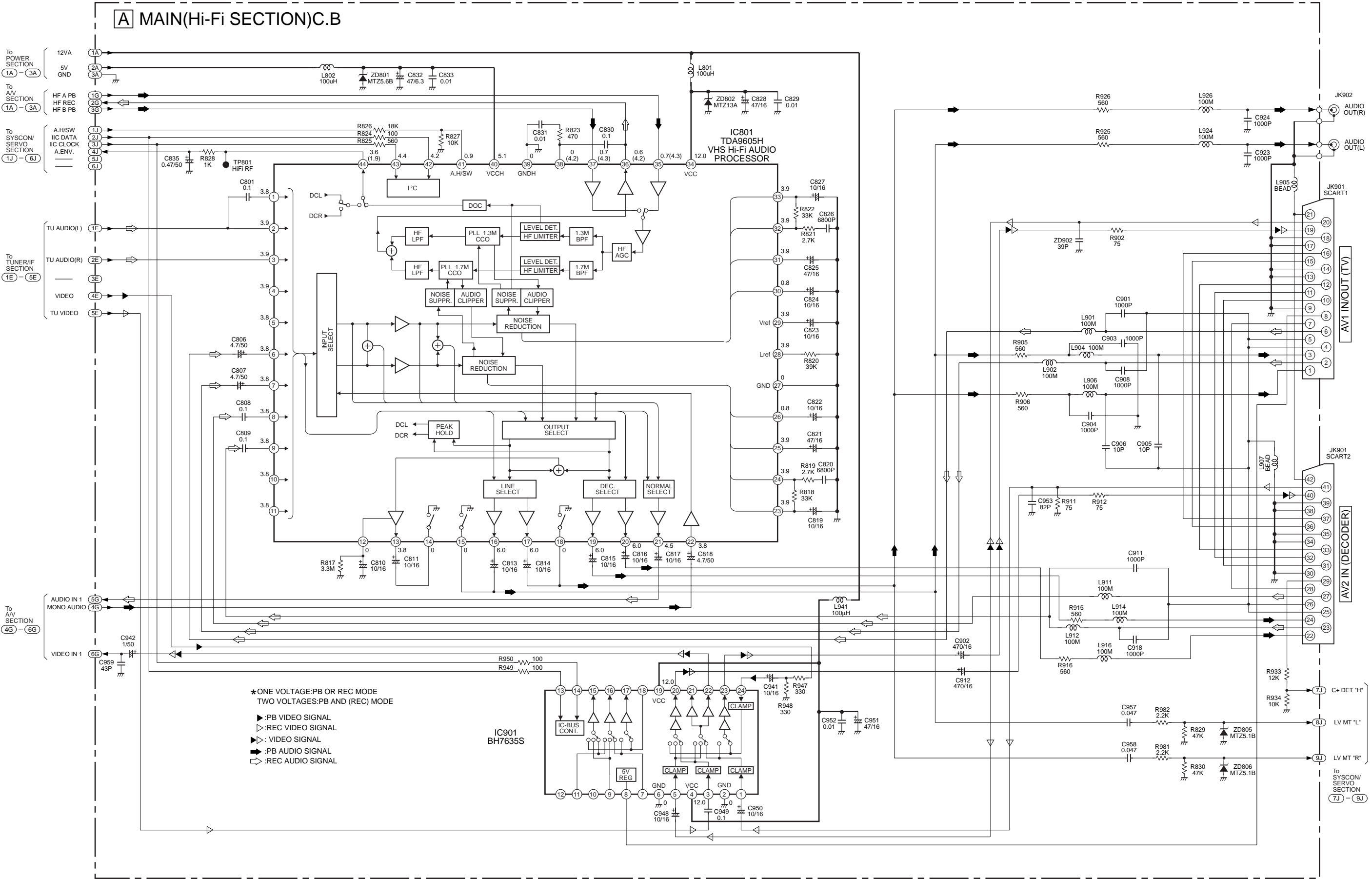
WAVEFORM-2 (SERVO/OSD SECTION)

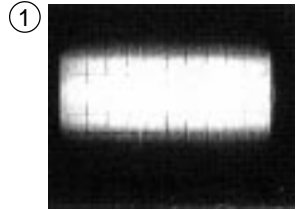
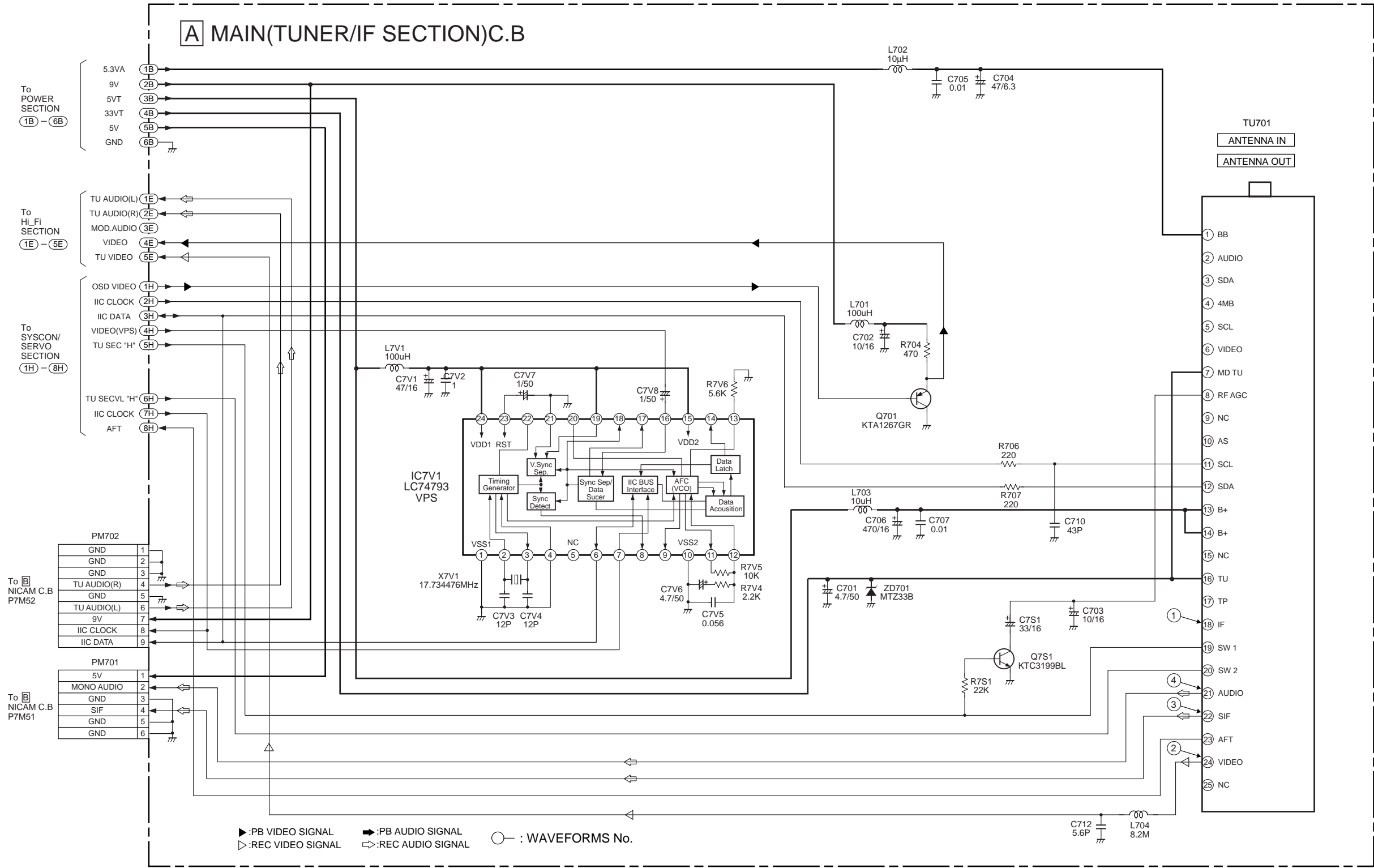


SCHEMATIC DIAGRAM-3 (SYSCON/SERVO SECTION)

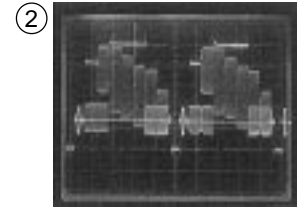


SCHEMATIC DIAGRAM-4 (Hi-Fi/SCART SECTION)

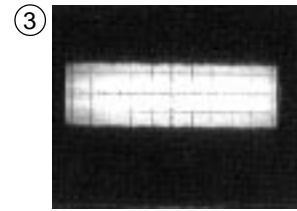




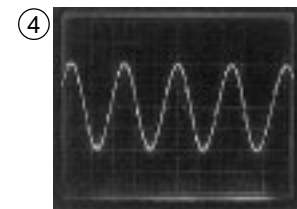
TU701 Pin ①
(IF Signal)



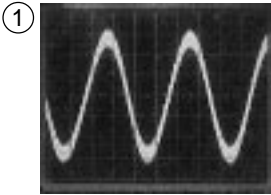
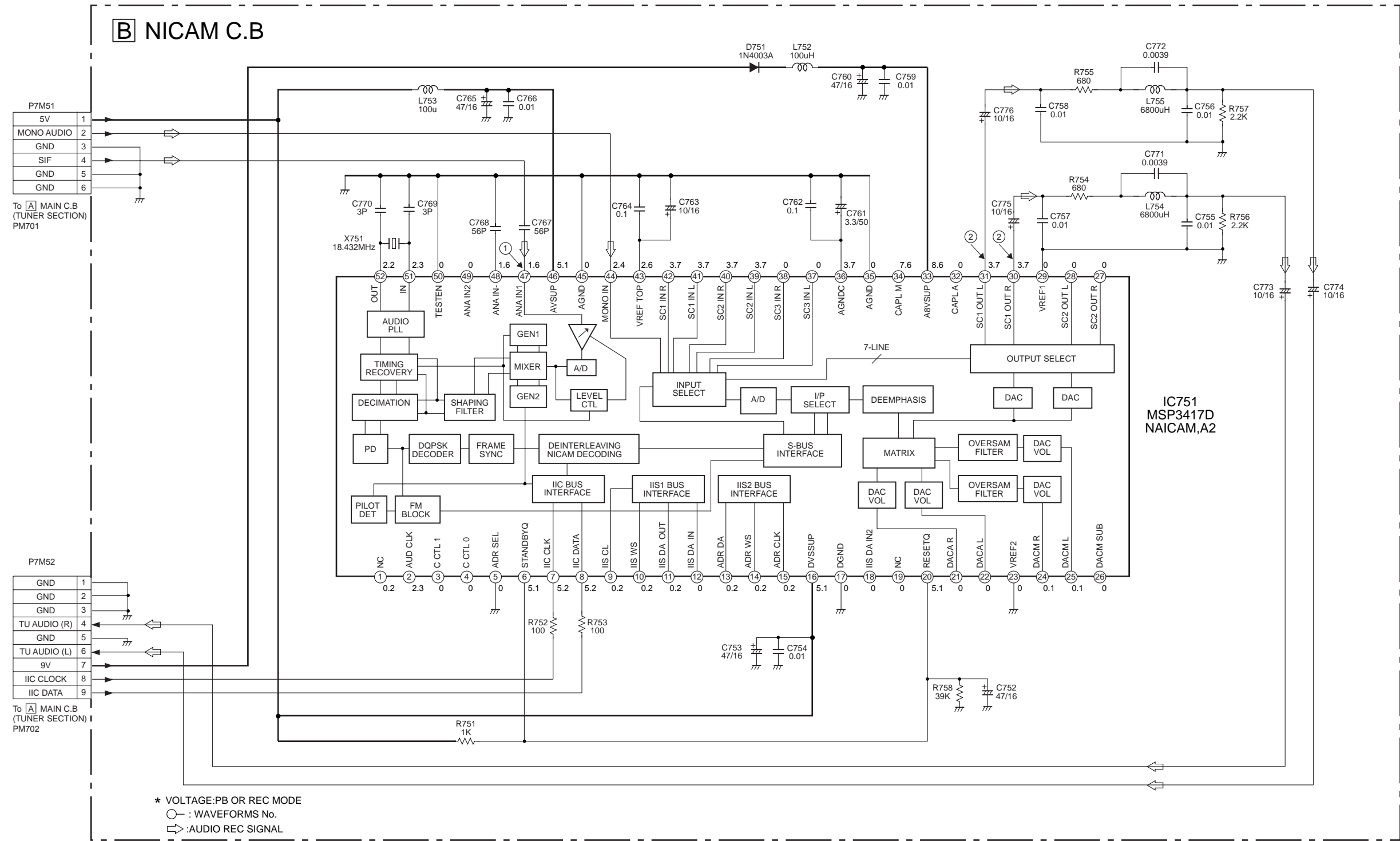
TU701 Pin ②④
(Video Signal)



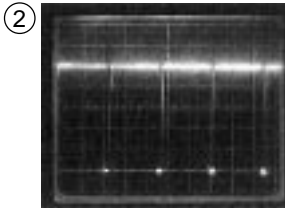
TU701 Pin ②②
(SIF Signal)



TU701 Pin ②①
(Audio Signal)

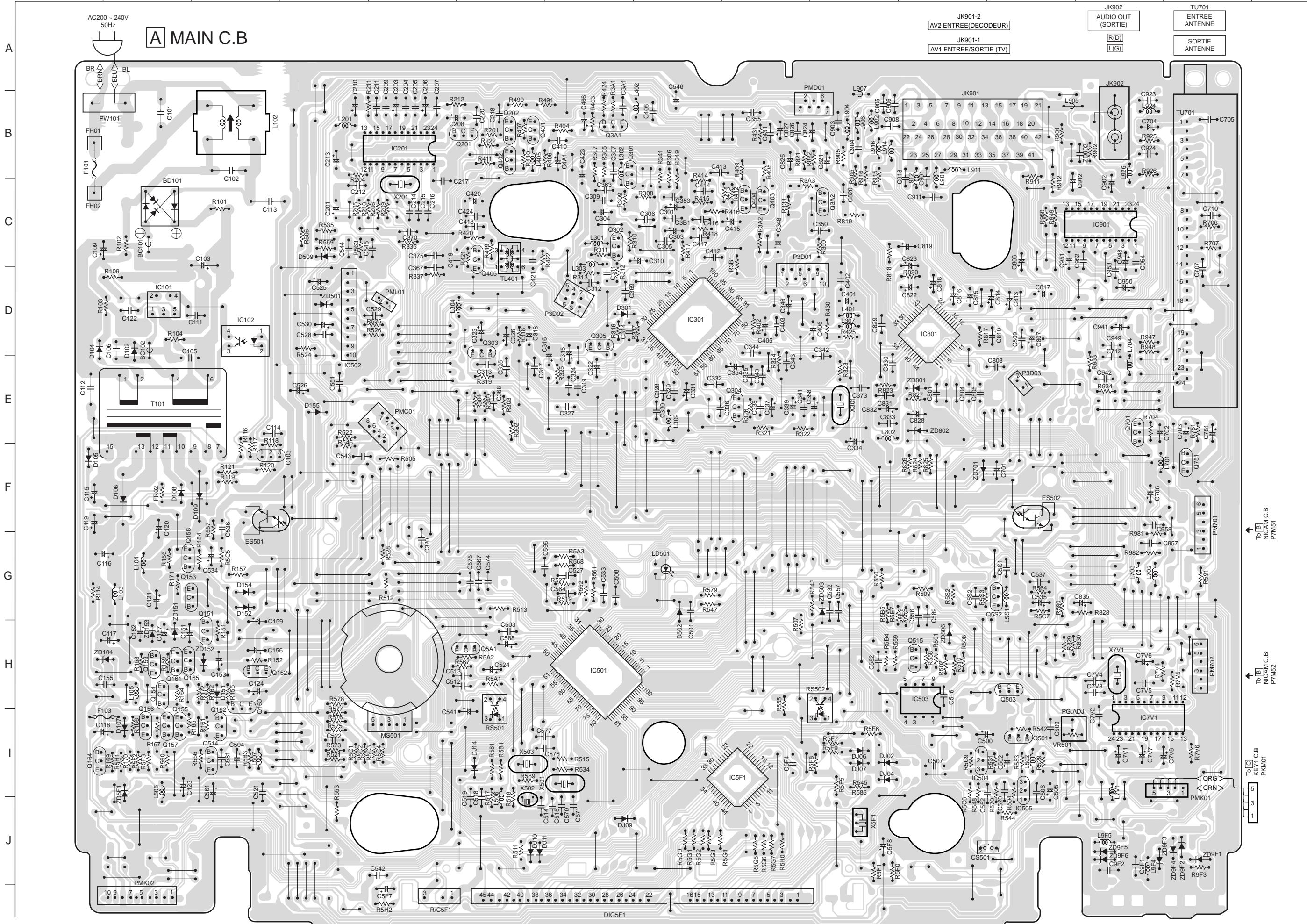


IC751 Pin ①
(IF Signal)

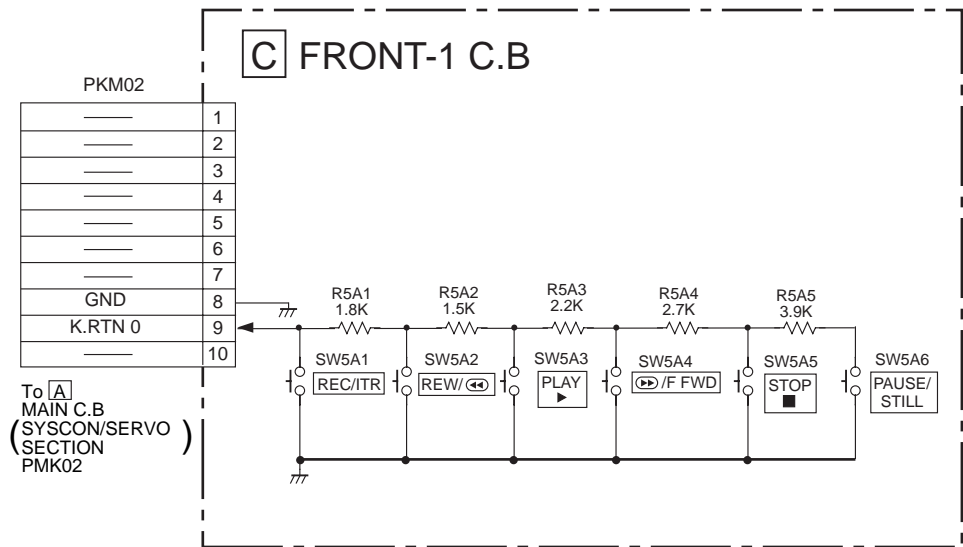


IC751 Pin ②

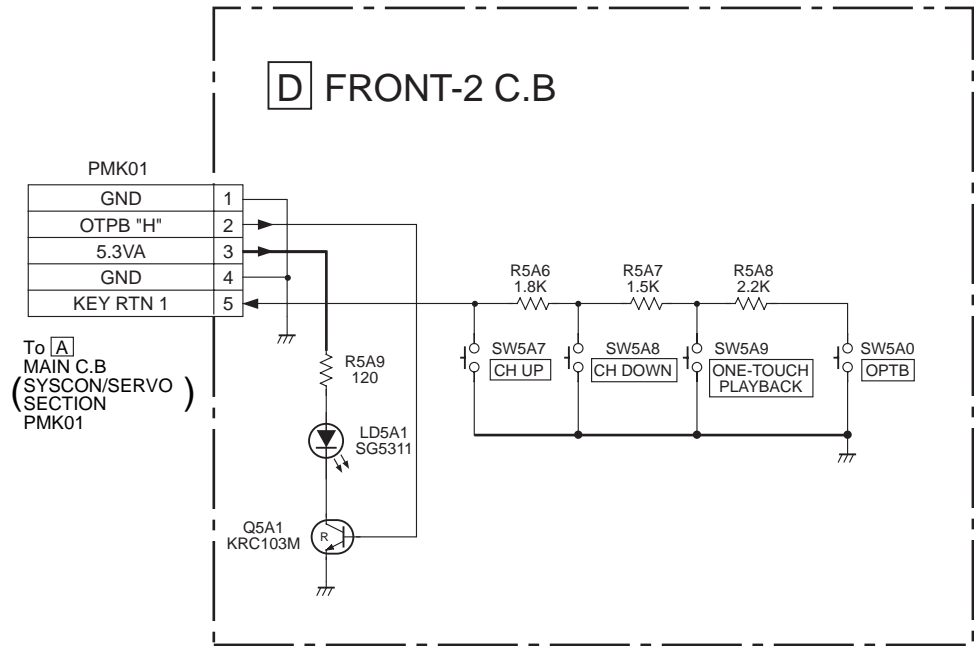
1	2	3	4	5	6	7	8	9	10	11	12	13	14
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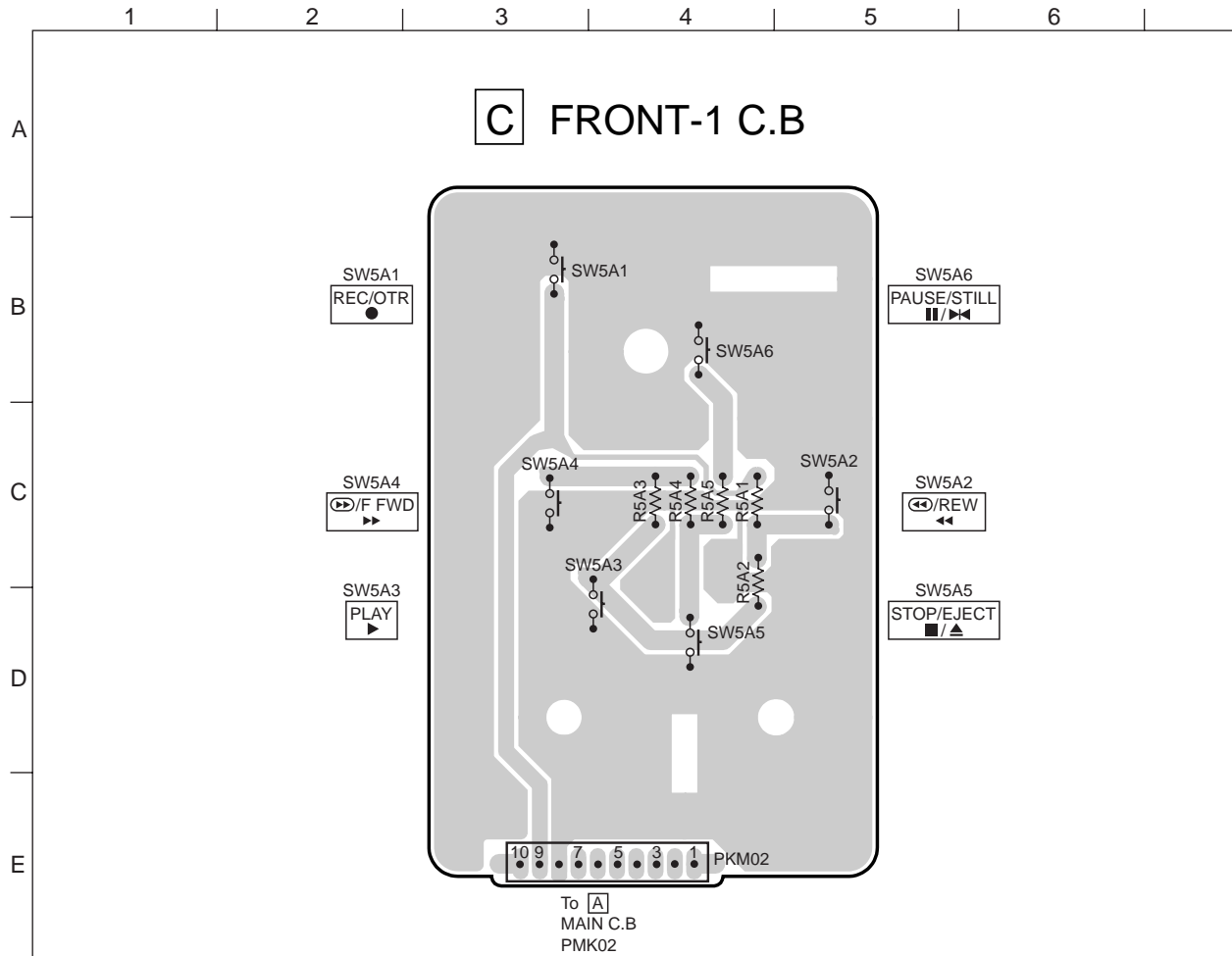
SCHEMATIC DIAGRAM-7 (FRONT-1 C.B SECTION)



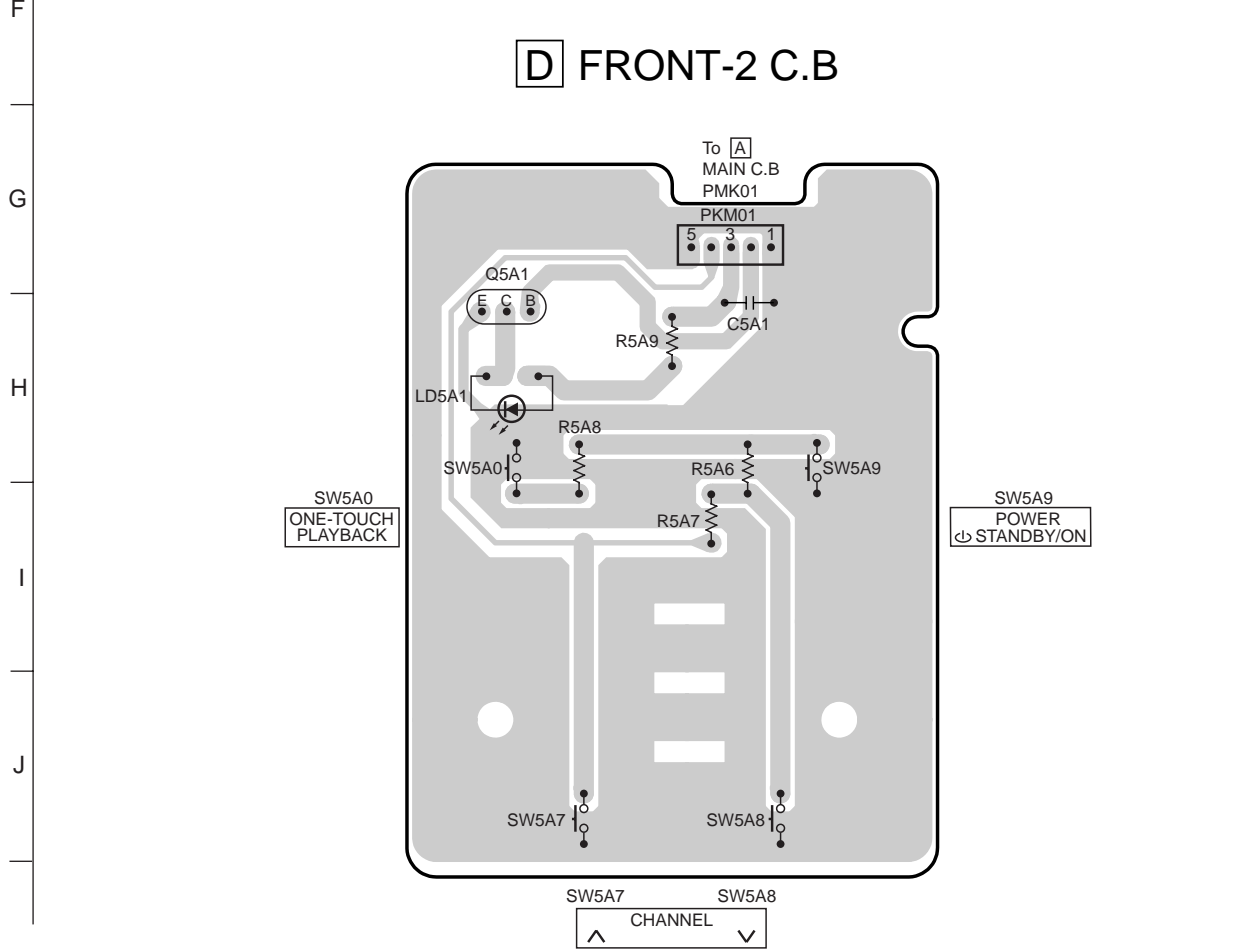
SCHEMATIC DIAGRAM-8 (FRONT-2 C.B SECTION)

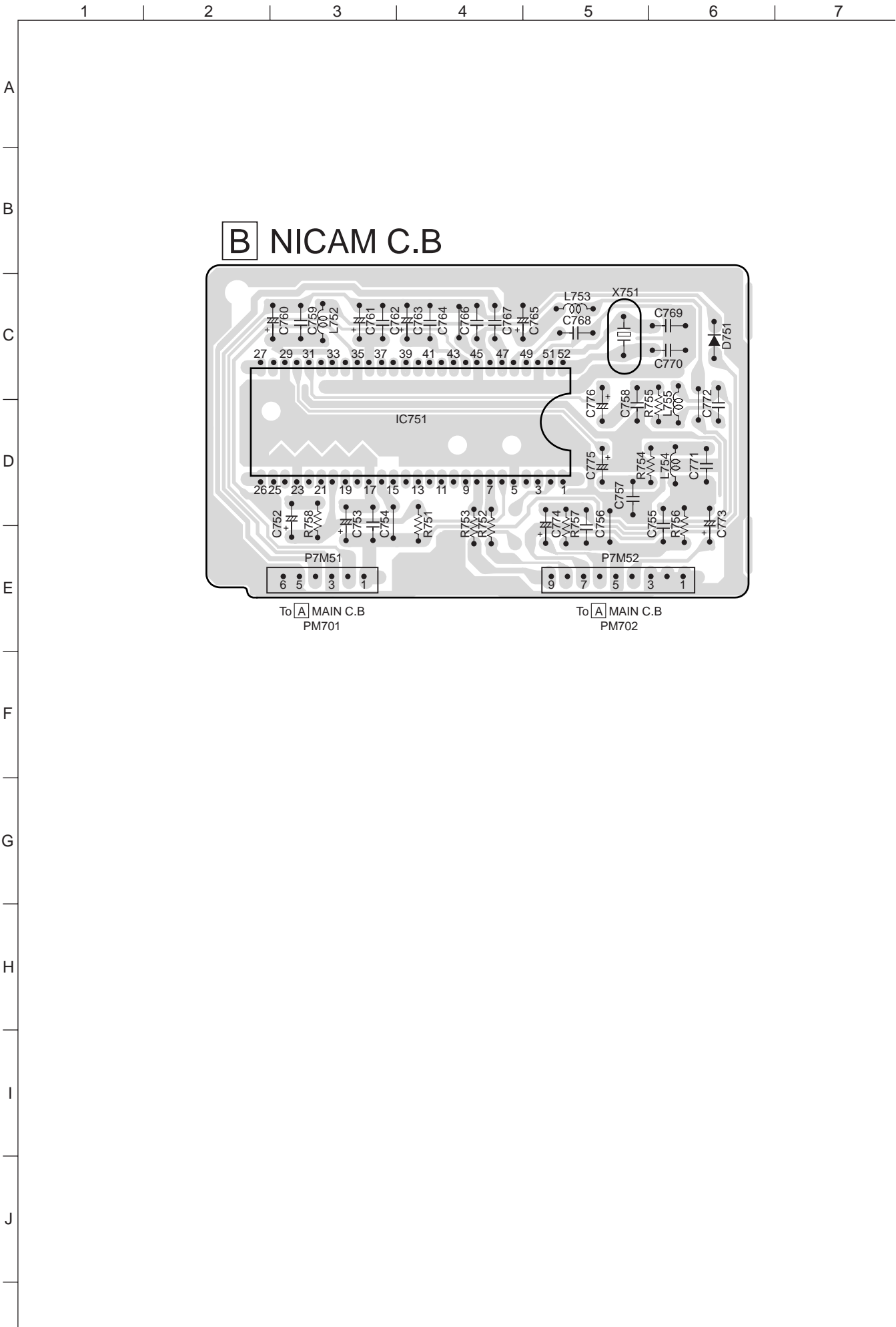


WIRING-2 (FRONT-1 C.B)



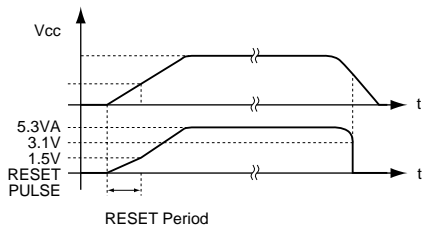
WIRING-3 (FRONT-2 C.B)





IC DESCRIPTION
IC, HD3977RC17F

Pin No.	Pin Name	I/O	Description								
1	TAKE UP SENSOR	I	End sensor to detect the tape’s terminal (Lead taps section). If “H” is detected signal in the REW, REV modes, the mechanism stops and ejects the cassette automatically.								
2	VSS (A/D)	–	GND								
3	END SENSOR	I	End sensor to detect tape’s terminal (Lead tape section). If “H” signal is detected in the FF mode, then REW mode will occur automatically.								
4	TAKE UP REEL	I	<div>1. When the tape is transporting. Reel pulses are input.</div> <div>2. If the tape is transporting and take-up reel pulses are not input during regular time, the unit stops at STOP point automatically.</div> <table><tr><td>Each operating mode</td><td>Sec</td></tr><tr><td>PLAY, REC</td><td>SP=3 EP/LP=6</td></tr><tr><td>FF, (REW)</td><td>2</td></tr><tr><td>CUE, (REV)</td><td>1</td></tr></table> <div>3. Distinguishes the tape type, counts the tape remaining and reduces the tape speed at the end of FF/REW modes.</div>	Each operating mode	Sec	PLAY, REC	SP=3 EP/LP=6	FF, (REW)	2	CUE, (REV)	1
Each operating mode	Sec										
PLAY, REC	SP=3 EP/LP=6										
FF, (REW)	2										
CUE, (REV)	1										
5	SUPPLY REEL	I	<div>1. When the tape is transporting, Reel pulses are input.</div> <div>2. Distinguishes the tape type, counts the tape remaining and reduces the tape speed at the end of FF/REW modes.</div> <div>3. If supply reel pulses are not detected, FF/REW mode is not operating normally. And the unit stops at stop point automatically. (Refer to table of pin 17.)</div>								
6	SED DET “H”	I	System detect for B/G or SECAM in VV/EE mode. (from SECAM I.C)								
7	NC “L”	–	Not connect								
8	NC “R”	–	Not connect								
9	AFT	I	<div>Port to detect AFT (+)’s state during tuning. When more than 4V, is detected by AFT (+) detector.</div> <div>Detects AFT (–)’s state during tuning. When less than 0.96V, is detected by AFT (–) detector.</div>								
10	PG ADJ	I	A DC bias level set by VR501 determines the pulse width of PG M.M for H. S/W 30 switching interval.								
11	NC	–	Not connect.								
12	V.ENV	I	<div>1. Reference input signal to perform auto tracking mode. Video envelope (F/F) signal is input through LPF.</div> <div>2. Perform auto tracking mode by sampling video envelope signal which is input during a period of head switching and changing servo tracking data to obtain maximum value.</div> <div>Note : When the DC level of the envelope is at its maximum, it is considered tracking properly.</div>								
13	KEY RTN 0	I	KEY RTN 0								

Pin No.	Pin Name	I/O	Description																		
14	KEY RTN 1	I	<table><tr><th>No.</th><th>KEY NAME</th><th>A/D RANGE</th></tr><tr><td>1</td><td>SP/EP</td><td>0.0V ~ 0.45V</td></tr><tr><td>2</td><td>CH UP</td><td>0.46V ~ 0.96V</td></tr><tr><td>3</td><td>CH DOWN</td><td>0.97V ~ 1.47V</td></tr><tr><td>4</td><td>STOP/EJECT</td><td>1.48V ~ 1.97V</td></tr><tr><td>5</td><td>REC/ITR</td><td>1.99V ~ 2.48V</td></tr></table>	No.	KEY NAME	A/D RANGE	1	SP/EP	0.0V ~ 0.45V	2	CH UP	0.46V ~ 0.96V	3	CH DOWN	0.97V ~ 1.47V	4	STOP/EJECT	1.48V ~ 1.97V	5	REC/ITR	1.99V ~ 2.48V
			No.	KEY NAME	A/D RANGE																
			1	SP/EP	0.0V ~ 0.45V																
			2	CH UP	0.46V ~ 0.96V																
			3	CH DOWN	0.97V ~ 1.47V																
			4	STOP/EJECT	1.48V ~ 1.97V																
			5	REC/ITR	1.99V ~ 2.48V																
			KEY RTN1																		
			<table><tr><th>No.</th><th>KEY NAME</th><th>A/D RANGE</th></tr><tr><td>1</td><td>PAUSE</td><td>0.0V ~ 0.45V</td></tr><tr><td>2</td><td>FF</td><td>0.46V ~ 0.96V</td></tr><tr><td>3</td><td>REW</td><td>0.97V ~ 1.47V</td></tr><tr><td>4</td><td>PLAY</td><td>1.48V ~ 1.97V</td></tr><tr><td>5</td><td>POWER</td><td>1.99V ~ 2.48V</td></tr></table>	No.	KEY NAME	A/D RANGE	1	PAUSE	0.0V ~ 0.45V	2	FF	0.46V ~ 0.96V	3	REW	0.97V ~ 1.47V	4	PLAY	1.48V ~ 1.97V	5	POWER	1.99V ~ 2.48V
			No.	KEY NAME	A/D RANGE																
1	PAUSE	0.0V ~ 0.45V																			
2	FF	0.46V ~ 0.96V																			
3	REW	0.97V ~ 1.47V																			
4	PLAY	1.48V ~ 1.97V																			
5	POWER	1.99V ~ 2.48V																			
1. Input detector port of A/D input key. Samples 256 steps with AVcc in the center and confirms which key is pressed by the input voltage.																					
2. Key voltage table.																					
3. Excluding above item's key sfter receiving, detecting and amplifying the remocon Data from the remocon receiver (RCSF1), decodes input signals from μ-COM (pin 82), performs its key operation.																					
15	VCC(A/D)	–	A/D Vcc.																		
16	RESET	I	1. Initially 5.3 VA is applied to Vcc pin 22 of μ-COM. This pulses is applied to clear the RAM inside the μ-COM and to reset programs to 0000H in ROM.																		
			2. Reset timing pulse. 																		
17	NC	–	Not connect																		
18	TUNER SECAM VL“H”	O	Now TUNING BAND is SECAM VHF-L. (to TUNER)																		
19	LD (–)	O	1. Output signal to IC502 for control of the loading motor's direction of rotation. 2. Control table of loading motor's driving direction.																		
20	LD (+)		<table><tr><th>Pin 19</th><th>Pin 20</th><th>Rotation of Loading Motor</th></tr><tr><td>H</td><td>H</td><td>Brake Mode.</td></tr><tr><td>H</td><td>L</td><td>Reverse Direction.</td></tr><tr><td>L</td><td>H</td><td>Forward Direction.</td></tr></table>	Pin 19	Pin 20	Rotation of Loading Motor	H	H	Brake Mode.	H	L	Reverse Direction.	L	H	Forward Direction.						
Pin 19	Pin 20	Rotation of Loading Motor																			
H	H	Brake Mode.																			
H	L	Reverse Direction.																			
L	H	Forward Direction.																			
21	C+DET “H”	I	Now input signal is CANAL/PREMIER. (from SCART 2)																		

Pin No.	Pin Name	I/O	Description
22	V _{cc} (SYS)	–	SYSCON V _{cc} .
23	A.H.S/W 30	O	Not connect
24	V.H.S/W	O	<p>Pulses output for switching video head A and B.</p> <ul style="list-style-type: none"> - Produces PG M.M pulses internally by using inputted DPG, DFG pulses to pin 38, 39. - Produces video head switching 30 Hz pulses by synchronizing at edge point of first PG. M.M.(PG monostable multivibrator) - Produces audio head switching 30 Hz pulses by synchronizing at edge point of second PG.M.M.
25	CAPSTAN PWM	O	<ul style="list-style-type: none"> - Output pulses (PWM waveform) for controlling capstan motor speed and phase; control feedback voltage which is inputted to the capstan motor driver IC. - Output pulses (PWM waveform) for controlling capstan motor stop and drive during slow mode.
26	DRUM PWM	O	Output pulses (PWM waveform) for controlling drum motor speed and phase; control feedback voltage which is inputted to the drum motor driver IC.
27	D.V. SYNC.	O	Provides an output sync signal to prevent the picture from rolling upward or downward, when the video track is not being scanned in the search mode.
28	COLOR ROTARY	O	A pulse to control phase of color at Y/C circuit.
29	HEAD AMP S/W	O	A pulse for switching the HEAD SP and EP on the DRUM.
30	COMP IN	I	A reference signal for switching video head (SPA, SPB, EPA, EPB) on the drum in search the mode.
31	CTL (+)	I/O	CTL pulse is outputted at recording, CTL pulse is inputted at playback. Functions which control Capstan motor phase at playback, check tape speed, Viss and Real time counter are performed by using CTL pulse (input/output).
32	CTL (–)		
33	V _{ss} (SERVO)	–	Servo circuit GND in the μ -COM.
34	CTL 1	I/O	Port for gain (Amp) control of CTL pulse during recording and playback.
35	CTL 2		
36	CTL 3		
37	CTL OUT		
38	D.FG	I	<p>D.FG pulse input according to rotation of drum motor.</p> <p>Produces Audio/Video Head S/W 30Hz by using these pulses. And it is used as a comparison signal for speed control of the drum motor.</p>
39	D.PG	I	<p>One D.PG pulse is generated for each rotation the drum motor and inputted to μ-COM.</p> <p>When producing Head S/W pulses, D.PG pulse is used as reference point, and it is used as comparison signal when controlling drum motor phase.</p>
40	C.FG	I	<p>C.FG pulses are generated by the rotating capstan motor and are inputted to μ-COM.</p> <p>When checking tape speed and controlling. The capstan motor phase, These CFG pulses are used as comparison signal.</p>
41	V _{cc} (SERVO)	I	V _{cc} for servo circuit in the μ -COM.
42	V _{cc} (OSD)	I	V _{cc} for OSD circuit in the μ -COM.
43	CV IN	I	When the OSD display function is activated both video and text are present, when in the EE or PB modes.

Pin No.	Pin Name	I/O	Description
44	Vref (OSD)	–	GND.
45	CV OUT	O	The video signal is output to the RF modulator and line output jack.
46	CHAR BIAS	–	GND.
47	AFC LPF	I	Horizontal sync is used to lock the OSD. (Reduce Jitter)
48	AFC OSC		
49	V _{ss} (OSD)	–	GND.
50	DOSC IN	I	OSD DOT CLOCK oscillator. (OSD character oscillator)
51	DOSC OUT	O	Determining the horizontal position (left or right) of OSD.
52	4fsc OUT	O	Oscillator for OSD Sync. signal.
53	4fsc IN	I	Generating a blue background.
54	COMPOSITE SYNC.	I	<ul style="list-style-type: none"> - Receives composite signal from Y/C circuit. - Separates V-sync and H-sync in the OSD internal block. - The sync signal determines the character position of OSD.
55	CTL GAIN ADJ	O	Level control for PB CTL. (to CTL control circuit)
56	SHC/MEC “H”	O	Y/C processing of Video signal at SCAM/MESECAM. (to Y/C)
57	CST IN	I	<ol style="list-style-type: none"> 1. Port to detect CST(cassette tape) switch input state. 2. With CST S/W input state, determines whether CST tape is inserted or not.
58	SCART “H”	O	SCART 8 pin level control to GND or 12V. (to SCART 1)
59	VIDEO Mute “H”	O	High “H” applied, turns on the OSD or POWER.
60	POWER CONTROL “H”	O	<ol style="list-style-type: none"> 1. A signal to switch voltages (5.3V, 12V) on/off which is controlled by the power key. 2. Outputs “H” in power On mode. Outputs “L” in power Off mode.
61	CAPSTAN REVERSE	O	<p>A signal to control capstan motor’s direction of rotation.</p> <p>“L” output = reverse direction. “H” output = forward direction.</p>
62	AUDIO MUTE “H”	O	<ol style="list-style-type: none"> 1. Outputs “H” to mute audio signal in search mode and without sync signal. 2. Outputs “H” to eliminate pop noise generated in each mode during early switching point (Approx. 500ms) (EE/VV, TUNER/LINE, POWER ON/OFF, CH. UP/DOWN etc.)
63	TU SEC “H”	O	Now TUNER system is SECAM-L. (to TUNER)
64	16:9 “H”	O	SCART 8 pin level control to GND or 7V. (to SCART 1)
65	TSS “L”	O	Output chip enable signal for ACSS IC (IC5A1)
66	THER “H”	O	POWER switching of VPS I.C V _{dd} in POWER off state.
67	OPT RITC (CTL MON)	I	<ol style="list-style-type: none"> 1. Outputs “H” to mute <u>speakez</u>. 2. Outputs “H” to eliminate pop noise generated in <u>speakez</u>.
68	TEST (GND)	–	GND.
69	X-TAL 2	O	<ol style="list-style-type: none"> 1. 32.768 kHz oscillator is used as standard clock for clock display. 2. When V_{cc} supplied, oscillation occurs.
70	X-TAL 1	I	
71	V _{ss}	–	μ-COM main ground.
72	OSC 1	I	<ol style="list-style-type: none"> 1. 10MHz oscillator is used to generate the standard clock used to operate the u-COM. 2. When V_{cc} is applied, Oscillation occurs. (But, when “L” is applied to pin 89 in power failure, Oscillation stops.)
73	OSC 2	O	

Pin No.	Pin Name	I/O	Description																																																																								
74	MODE SW4	I	<div>1. Port to ditect the mechanism’s position.</div> <div>2. Deck and Mode SW Positions.</div> <table><thead><tr><th>No.</th><th>MODE SW4</th><th>MODE SW3</th><th>MODE SW2</th><th>MODE SW1</th><th>DECK POSITION NAME</th></tr></thead><tbody><tr><td>1</td><td>L</td><td>H</td><td>L</td><td>H</td><td>RETURN</td></tr><tr><td>2</td><td>L</td><td>L</td><td>L</td><td>H</td><td>EJECT</td></tr><tr><td>3</td><td>L</td><td>L</td><td>H</td><td>L</td><td>ULC</td></tr><tr><td>4</td><td>L</td><td>H</td><td>H</td><td>L</td><td>LOADING START</td></tr><tr><td>5</td><td>H</td><td>H</td><td>L</td><td>L</td><td>LOADING END</td></tr><tr><td>6</td><td>H</td><td>L</td><td>L</td><td>L</td><td>TUNE</td></tr><tr><td>7</td><td>H</td><td>L</td><td>H</td><td>H</td><td>REV</td></tr><tr><td>8</td><td>H</td><td>L</td><td>H</td><td>H</td><td>PLAY</td></tr><tr><td>9</td><td>H</td><td>L</td><td>L</td><td>H</td><td>STOP</td></tr><tr><td>10</td><td>H</td><td>H</td><td>L</td><td>H</td><td>FF, REW</td></tr><tr><td>11</td><td>H</td><td>H</td><td>H</td><td>H</td><td>PASS</td></tr></tbody></table> <div><div>↑ UNLOADING</div><div>↓ LOADING</div></div>	No.	MODE SW4	MODE SW3	MODE SW2	MODE SW1	DECK POSITION NAME	1	L	H	L	H	RETURN	2	L	L	L	H	EJECT	3	L	L	H	L	ULC	4	L	H	H	L	LOADING START	5	H	H	L	L	LOADING END	6	H	L	L	L	TUNE	7	H	L	H	H	REV	8	H	L	H	H	PLAY	9	H	L	L	H	STOP	10	H	H	L	H	FF, REW	11	H	H	H	H	PASS
No.	MODE SW4			MODE SW3	MODE SW2	MODE SW1	DECK POSITION NAME																																																																				
1	L			H	L	H	RETURN																																																																				
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7	H			L	H	H	REV																																																																				
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9	H			L	L	H	STOP																																																																				
10	H	H	L	H	FF, REW																																																																						
11	H	H	H	H	PASS																																																																						
75	MODE SW3																																																																										
76	MODE SW2																																																																										
77	MODE SW1																																																																										
78	I-LIMIT	I	<div>1. Input signal for stopping capstan motor.</div> <div>2. When this port inputs “L”, the capstan motor stops.</div>																																																																								
79	REC “H”	O	<div>1. When REC mode is operaing normally, outputs “H”.</div> <div>2. Switched to REC mode by operating audio, Y/C pre-amp.</div> <div>3. Outputs “H” and record audio, video signals on the tape.</div>																																																																								
80	CAP ACCEL “H”	O	Pulse output to control capstan motor in slow mode.																																																																								
81	DRUM ADJ	O	Pulse output to control drum motor in slow mode.																																																																								
82	R/C	I	<div>1. This pin receives remocon data through RC901, which amplifies and detects the R/C signal.</div> <div>2. After input signal is decoded in u-COM (IC501), and performs related key operation.</div>																																																																								
83	G4	O	The signal for each segment and grid driving in the LED Clock.																																																																								
84	G3	O																																																																									
85	G2	O																																																																									
86	G1	O																																																																									
87	COMPOSITE SYNC. (INV)	I	<div>1. Input C-Sync (composite sync) to confirm whether video signal is present or not.</div> <div>2. Confirms by counting 1H (63.5μsec) horizontal sync for a fixed time period.</div>																																																																								
88	STAND BY “H”	O	Power switching of DIGITRON in 3W mode.																																																																								

Pin No.	Pin Name	I/O	Description
89	POWER FAIL	I	<p>1. When a power failure is detected, this pin goes “L” and the following sequence of events occurs.</p> <p>2. Power failure detector timing sequence.</p> <p>AC POWER ON AC POWER OFF</p> <p>Vcc for (Back-up)</p> <p>AVcc No (Back-up)</p> <p>5.3VA</p> <p>Power failure signal</p> <p>10MHz OSC</p> <p>36.768kHz OSC</p> <p>Reset pulse</p> <p>Power failure compensation relation</p> <p>Normal operation state Power failure compensation state Power failure compensation cancel state</p> <p>(μ-COM memory loss state)</p>
90	IIC	O	A reference CLOCK for Hi-Fi, TU/IF, MTS, SPEAKER
91	IIC	O	A reference DATA for Hi-Fi, TU/IF, MTS, SPEAKER
92	S9	O	The signal for each segment and grid driving in the LED Clock.
93	S8	O	
94	FLD ENABLE	O	Outputs chip enable signal for FLD Drive IC (IC5F1).
95	FLD CLOCK	O	Outputs clock signal to operate FLD Drive IC (IC5F1).
96	FLD DATA IN	I	Serial interface signals for FLD Drive IC control.
97	FLD DATA OUT	O	
98	S3	O	The signal for each segment and grid driving in the LED Clock.
99	S2	O	
100	S1	O	

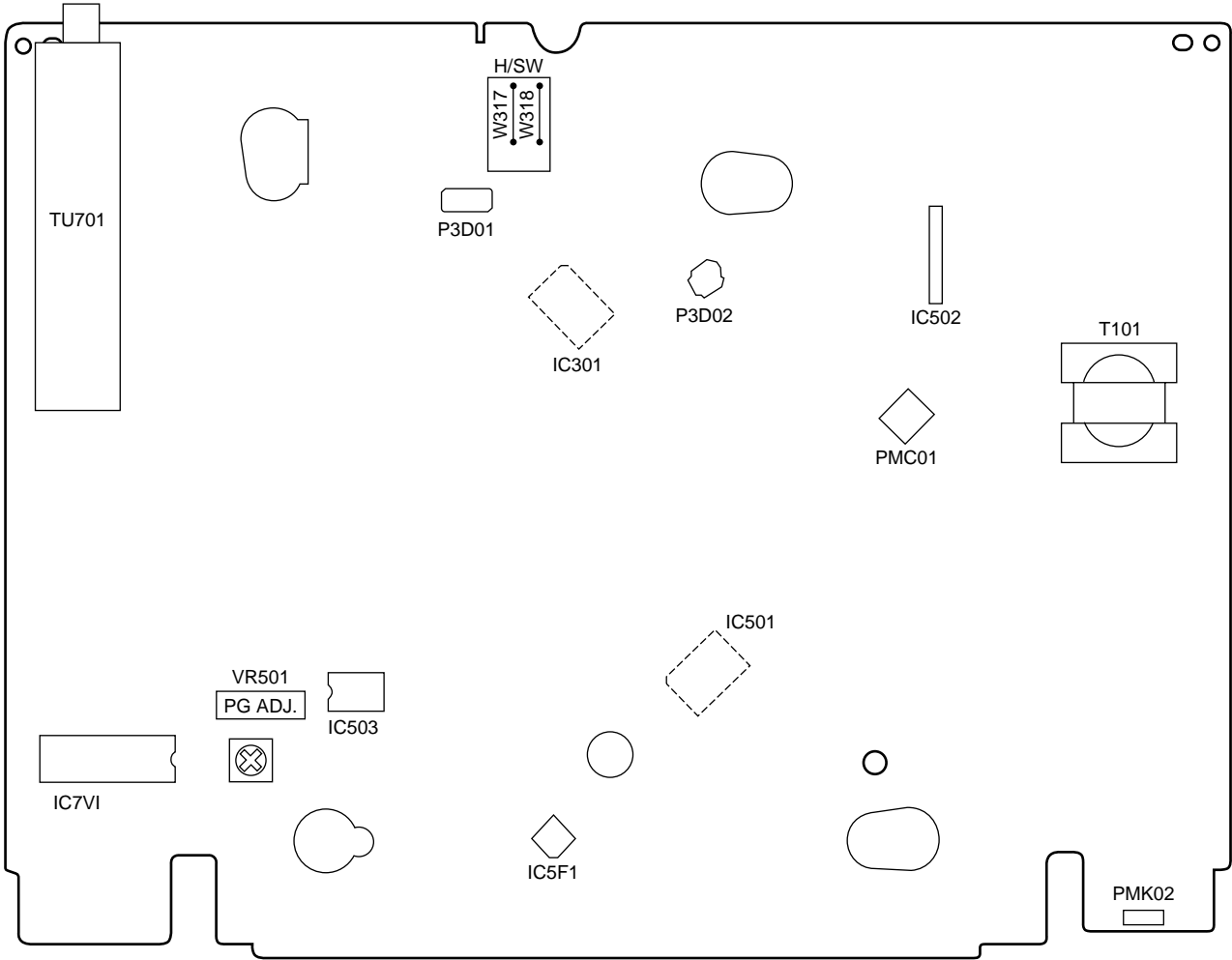
ADJUSTMENT

Test Equipment

<ul style="list-style-type: none">• Oscilloscope• AC Millivolt Meter	<ul style="list-style-type: none">• Test TapeTTV-P1
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Adjustment Location

A MAIN C.B (TOP VIEW)



1. Servo Adjustment

1) PG Adjustment

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY (TTV-P1)	VIDEO OUT H/SW (W317, W318)	VR501	$6.5 \pm 0.5H$

- Adjustment Procedure

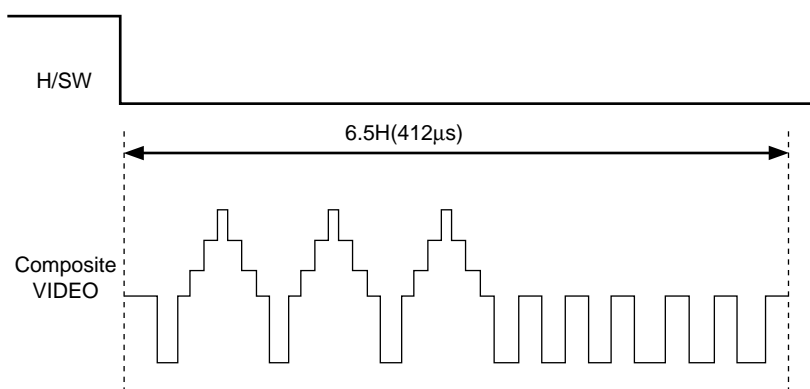
1. Insert the PAL SP Test Tape (TTV-P1) and play.

Note - Adjust the distance of X, pressing the Tracking(+) or Tracking(-) when the "ATR" is blink after the PAL SP Test Tape is inserted.

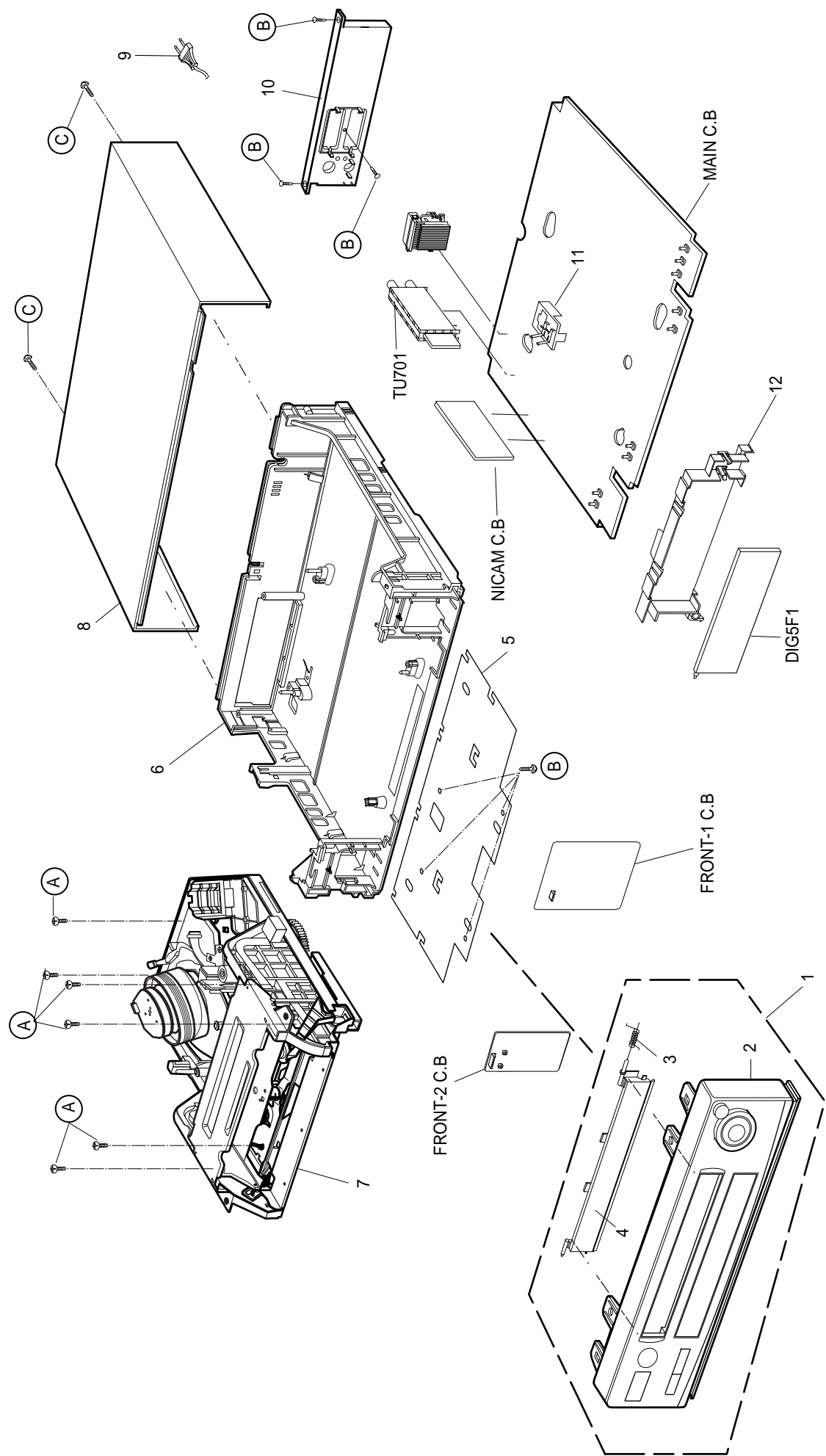
2. Connect the CH1 of the oscilloscope to the H/SW (W317, 318) and CH2 to the Video Out for the VCR.

3. Trigger the mixed Video Signal of CH2 to the CH1 H.SW (W317, W318), and then check the distance (time difference), which is from the selected A(B) Head point of the H.SW(W317, W318) signal to the starting point of the vertical synchronized signal, to $6.5H \pm 0.5H$ ($412\mu s$, $1H=63.5\mu s$).

- WAVEFORM



MECHANICAL EXPLODED VIEW 1/1



MECHANICAL MAIN PARTS LIST

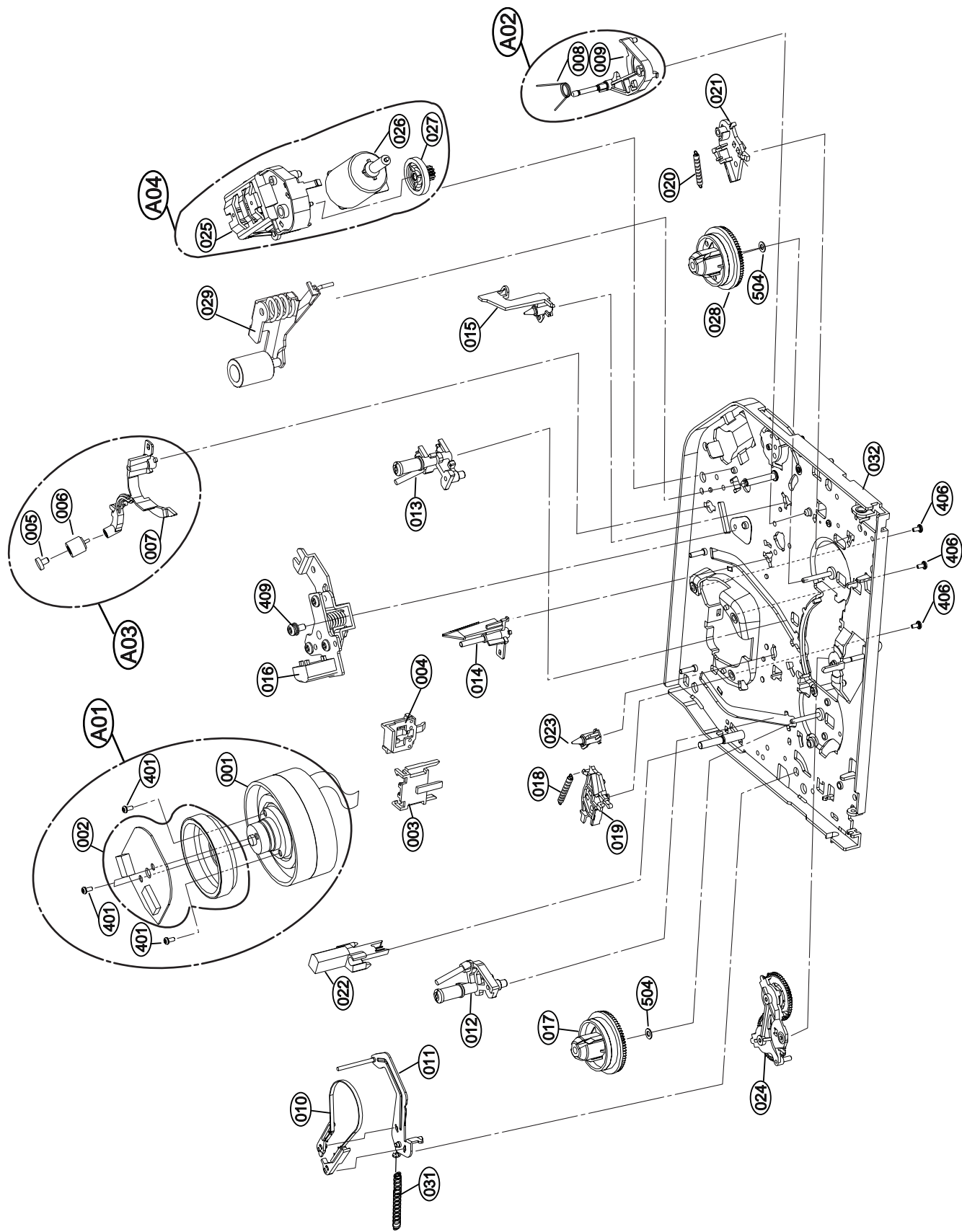
DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
001	S7-21R-F09-4D0		PANEL ASSY, FRONT
002	—		PANEL FRONT
003	S4-426-81A-000		SPR, DOOR
004	S5-80R-003-3D0		DOOR CST
005	S5-50R-021-0A0		COVER BOTTOM
006	S2-10R-002-3D0		FRAME MAIN
007	—		DECK ASSY D33 4HF
008	S1-10R-012-8K0		CASE TOP
009	S4-10R-CHD-01A		POWER CORD
010	S7-21R-D02-3J0		PANEL ASSY L
011	S1-11R-008-9B0		CASE ASSY
012	S9-30R-013-3B0		HOLDER DIGITRON
A	87-741-097-410		SCREW, 3-12
B	S3-530-51A-000		SCREW, SPECIAL
C	S3-531-36A-000		SCREW, SPECIAL (FBK)

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

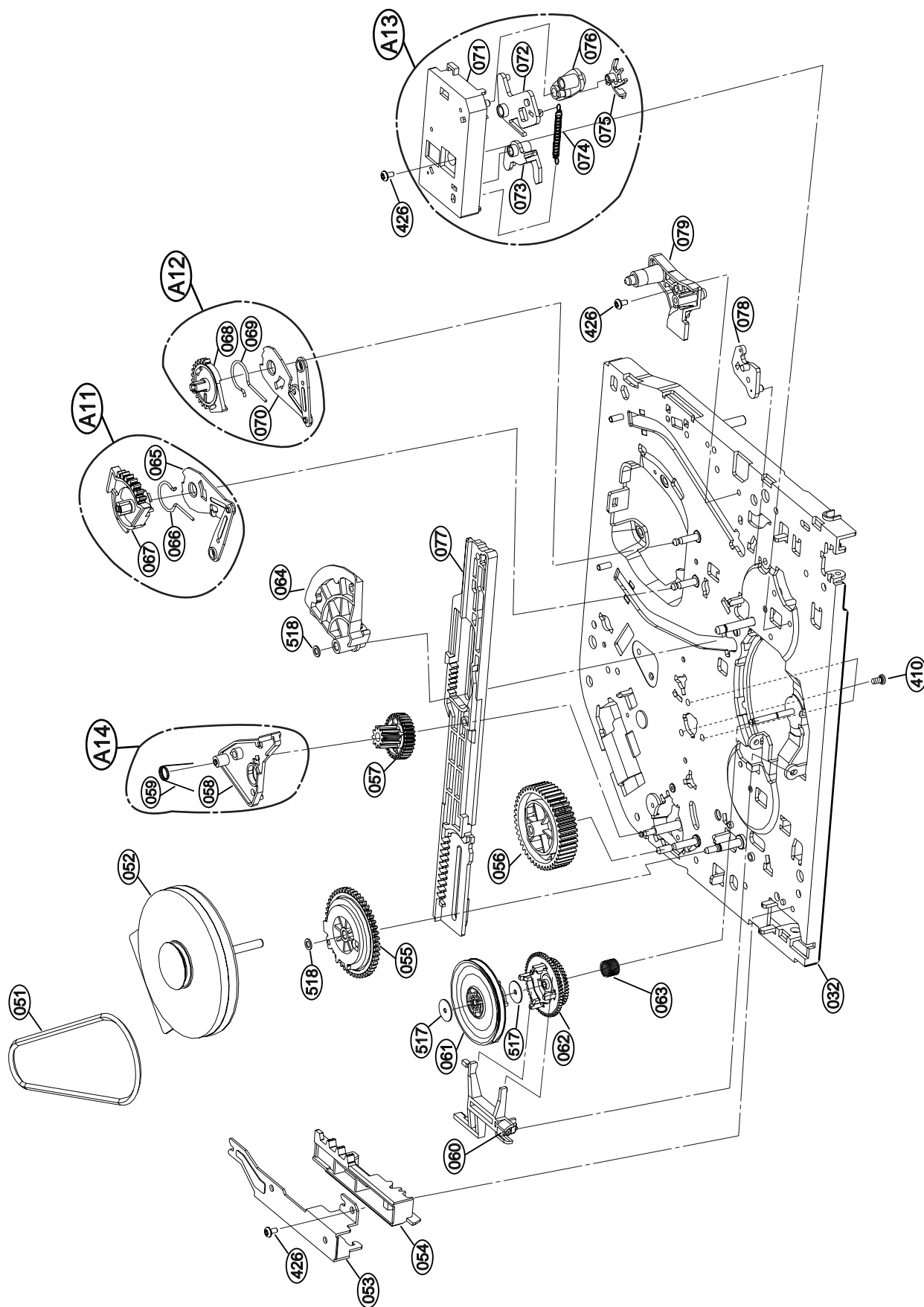
MECHANISM EXPLODED VIEW 1/3



MECHANISM MAIN PARTS LIST 1/3

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If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

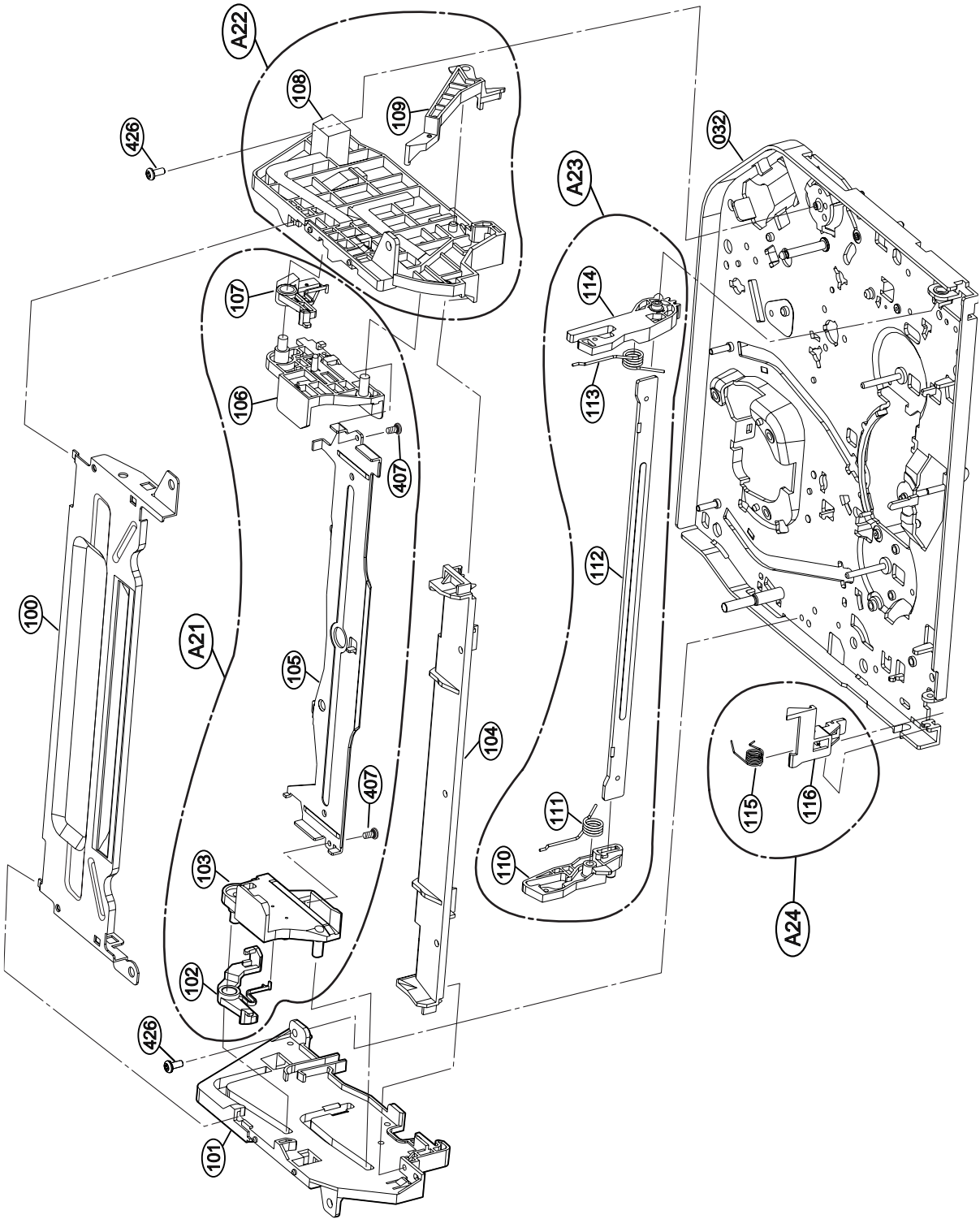
REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
001	S7-23R-010-6D0		DRUM ASSY SUB D33-6CH	026	S6-81R-000-7A0		MOTOR ASSY L/D
002	S6-80R-B00-04A		MOTOR (MECH)	027	S4-70R-002-5A0		GEAR WHEEL
003	S9-30R-010-8A0		HOLDER FPC (6CH)	028	S4-08R-000-2A0		REEL T
004	S0-06R-001-4A0		CAP, FPC	029	S2-61R-001-1A0		ARM ASSY PINCH
005	—		CAP, A CLEANER	031	S9-70R-005-2A0		SPRING TENSION
006	—		ROLLER CLEANER	032	S1-41R-000-2A0		CHASSIS ASSY
007	—		ARM CLEANER	401	87-261-071-410		PAN HEAD SCREW 2.6-4
008	S9-70R-004-3A0		SPRING T/UP	406	87-261-094-410		PAN HEAD SCREW 3-6
009	S2-60R-001-1A0		ARM T/UP	409	87-741-095-410		SCREW, PAN HEAD 3.0-8.0
010	S7-70R-000-4A0		BAND ASSY TENSION (MECH)	504	S3-540-01B-000		WASHER, P.S 3.1-6-0.5
011	S2-61R-000-4A0		ARM ASSY TENSION	A01	—		DRUM (CIRC) ASSY D33-6CH
012	—		BASE ASSY P2	A02	—		ARM ASSY
013	S0-41R-000-4A0		BASE ASSY P3	A03	S2-61R-000-3A0		ARM ASSY CLEANER
014	S0-41R-000-7A0		BASE ASSY P4	A04	—		BRACKET ASSY L/D MOTOR
015	S8-70R-000-1A0		OPENER LID				
016	S0-41R-000-5A0		BASE ASSY A/C HEAD				
017	S4-08R-000-1A0		REEL S				
018	S9-70R-005-4A0		SPRING SB				
019	S4-21R-000-3A0		BRAKE ASSY S				
020	S9-70R-005-3A0		SPRING TB				
021	S4-21R-000-4A0		BRAKE ASSY T				
022	S5-238-33B-000		HEAD FE D33				
023	S9-80R-001-0A0		SUPPORTER CST				
024	S2-61R-000-9A0		ARM ASSY IDLER-J				
025	S8-10R-005-3A0		BRACKET L/D MOTOR				



MECHANISM MAIN PARTS LIST 2/3

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
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REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
032	S1-41R-000-2A0		CHASSIS ASSY	069	—		SPRING L/D
051	S4-00R-000-5A0		BELT CAPSTAN	070	—		LEVER P2
052	S6-80R-000-2A0		MOTOR(MECH)	071	—		BRACKET JOG
052	S6-80R-A00-03A		MOTOR(MECH)	072	—		LEVER JOG
	S9-74R-001-8A0		GUIDE RACK F/L	073	—		LEVER SLOW
054	S4-70R-003-7A0		GEAR RACK F/L	074	S9-70R-004-9A0		SPRING JOG
055	S4-70R-003-3A0		GEAR DRIVE	075	—		GEAR JOG
056	S4-70R-003-2A0		GEAR CAM	076	—		ARM JOG
057	S4-70R-003-6B0		GEAR CONNECT	077	S3-00R-015-7A0		PLATE SLIDER
058	—		BRAKE CAPSTAN	078	S5-10R-002-2A0		LEVER TENSION
059	S9-70R-005-9A0		SPRING CAPSTAN	079	S0-40R-001-8A0		BASE TENSION
060	S5-10R-002-5A0		LEVER F/R	410	SA-PF0-262-218		SCREW,PAN HEAD 2.6-6.8
061	S2-65R-000-2A0		CLUTCH ASSY	426	87-261-094-410		PAN HEAD SCREW 3-6
062	S4-70R-004-4A0		GEAR ASSY UP/D	517	SW-ZZR-000-4B0		WASHER STOPPER
063	S9-70R-005-1A0		SPRING UP/D	518	SW-ZZR-000-4A0		WASHER STOPPER
064	S4-70R-003-4A0		GEAR SECTOR	A11	S4-70R-002-8A0		GEAR ASSY P3
065	—		LEVER P3	A12	S4-70R-002-6A0		GEAR ASSY P2
066	—		SPRING L/D	A13	S8-11R-001-2A0		BRACKET ASSY JOG
067	—		GEAR P3	A14	—		BRACKET ASSY CAPSTAN
068	—		GEAR P2				



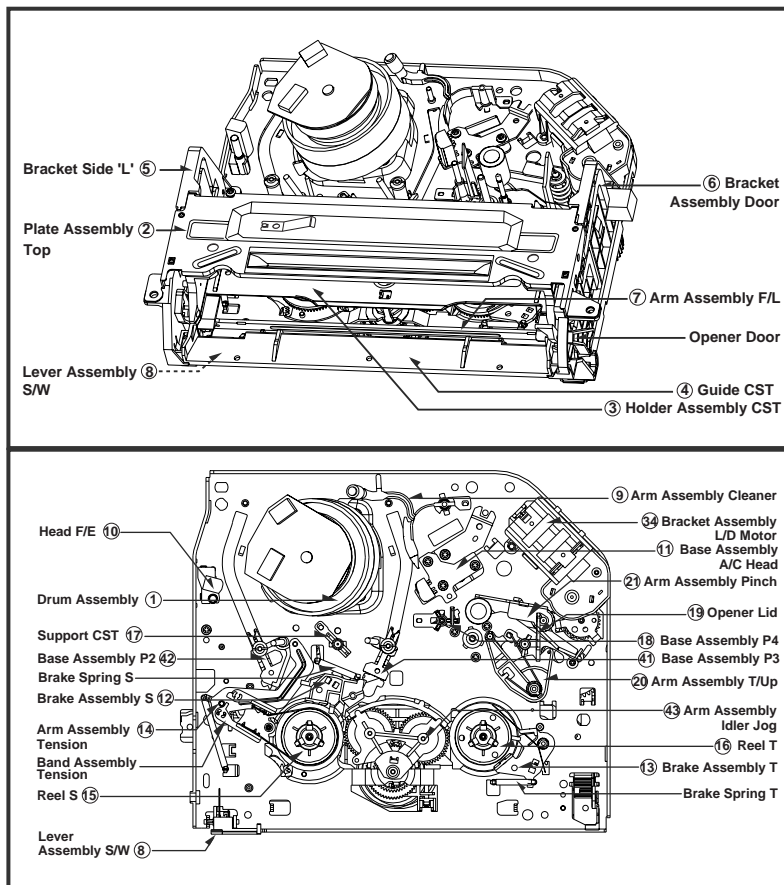
MECHANISM MAIN PARTS LIST 3/3

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
 If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
032	S1-41R-000-2A0		CHASSIS ASSY	114	—		ARM F/L(R)
100	S3-01R-002-9A0		PLATE ASSY TOP	115	S9-70R-005-0A0		SPRING SWITCH
101	S8-10R-005-6A0		BRACKET SIDE(L)	116	S5-10R-002-0A0		LEVER SWITCH
102	—		LEVER STOPPER(L)	407	87-841-034-210		SCREW PAN HEAD 2.0-5.0
103	—		HOLDER SIDE(L)	426	87-261-094-410		PAN HEAD SCREW 3-6
104	S9-74R-001-9A0		GUIDE CST	A21	S9-31R-001-5A0		HOLDER ASSY CST
105	—		HOLDER CST	A22	S8-11R-001-4A0		BRACKET ASSY
106	—		HOLDER SIDE(R)	A23	S2-61R-001-0A0		ARM ASSY F/L
107	—		LEVER STOPPER(R)	A24	—		LEVER ASSY SWITCH
108	—		BRACKET SIDE(R)				
109	—		OPENER DOOR				
110	—		ARM F/L(L)				
111	—		SPRING F/L(L)				
112	—		BODY F/L				
113	—		SPRING F/L(R)				

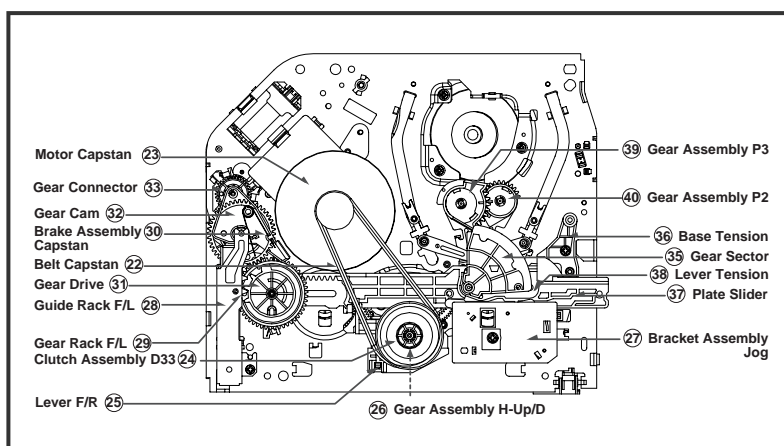
DECK MECHANISM PARTS LOCATIONS

• Top View



Pracedure	Starting No.	Part	Fixing Type	Figure
	1	Drum Assembly	3 Screws , Cap FPC	A-1
	2	Plate Assembly Top	Two Hooks	A-2
	3	Holder Assembly CST	Chassis Hole	A-2
	4	Guide CST	2 Hooks	A-2
	5	Bracket Side (L)	1 Screw	A-2
	6	Bracket Assembly Door	1 Screw	A-2
	7	Arm Assembly F/L	Chassis Hole	A-2
	8	Lever Assembly S/W	Chassis Hole	A-2
	9	Arm Assembly Cleaner	Chassis Embossing	A-3
	10	Head F/E	2 Hooks	A-3
	11	Base Assembly A/C Head	1 Screw	A-3
	12	Brake Assembly S	Chassis Hole	A-4
	13	Brake Assembly T	Chassis Hole	A-4
	14	Arm Assembly Tension	Chassis Hole	A-4
	15	Reel S	Chassis Shaft	A-4
	16	Reel T	Chassis Shaft	A-4
	17	Support CST	Chassis Embossing	A-5
	18	Base Assembly P4	Chassis Embossing	A-5
	19	Opener Lid	Chassis Embossing	A-5
	20	Arm Assembly T/Up	Chassis Embossing	A-5
	21	Arm Assembly Pinch	Chassis Shaft	A-5

• Bottom View



NOTE : When reassembly perform the procedure in the reverse order.

- 1) When reassembling, confirm Mechanism and Mode Switch Alignment Position (Pefer to Page 69)
- 2) When disassembling, the Parts for Starting No. Should be removed first.

Pracedure	Starting No.	Part	Fixing Type	Figure
	22	Belt Capstan	3 Screws	A-6
	23	Motor Capstan	1 Washer	A-6
	24	Clutch Assembly D33	1 Hook	A-6
	25	Lever F/R	2 Washers	A-6
	26	Gear Assembly H-Up/D	1 Screw	A-7
	27	Bracket Assembly Jog	1Screw	A-7
	28	Guide Rack F/L		A-7
	29	Gear Rack F/L		A-7
	30	Brake Assembly Capstan	Chassis Shaft	A-7
	31	Gear Drive	1 Washer	A-8
	32	Gear Cam	Chassis Shaft	A-8
	33	Gear Connector	Chassis Shaft	A-8
	34	Bracket Assembly L/D Motor	3 Hooks	A-8
	35	Gear Sector	3 Washers	A-9
	36	Base Tension	1 Screw	A-9
	37	Plate Slider	Chassis Shaft	A-9
	38	Lever Tension	Chassis Hole	A-9
	39	Gear Assembly P3	2 Hooks	A-10
	40	Gear Assembly P2	2 Hooks	A-10
	41	Base Assembly P3	Chassis Hole	A-10
	42	Base Assembly P2	Chassis Hole	A-10
	43	Arm Assembly Idler Jog	1 Hook	A-10

DECK MECHANISM DISASSEMBLY

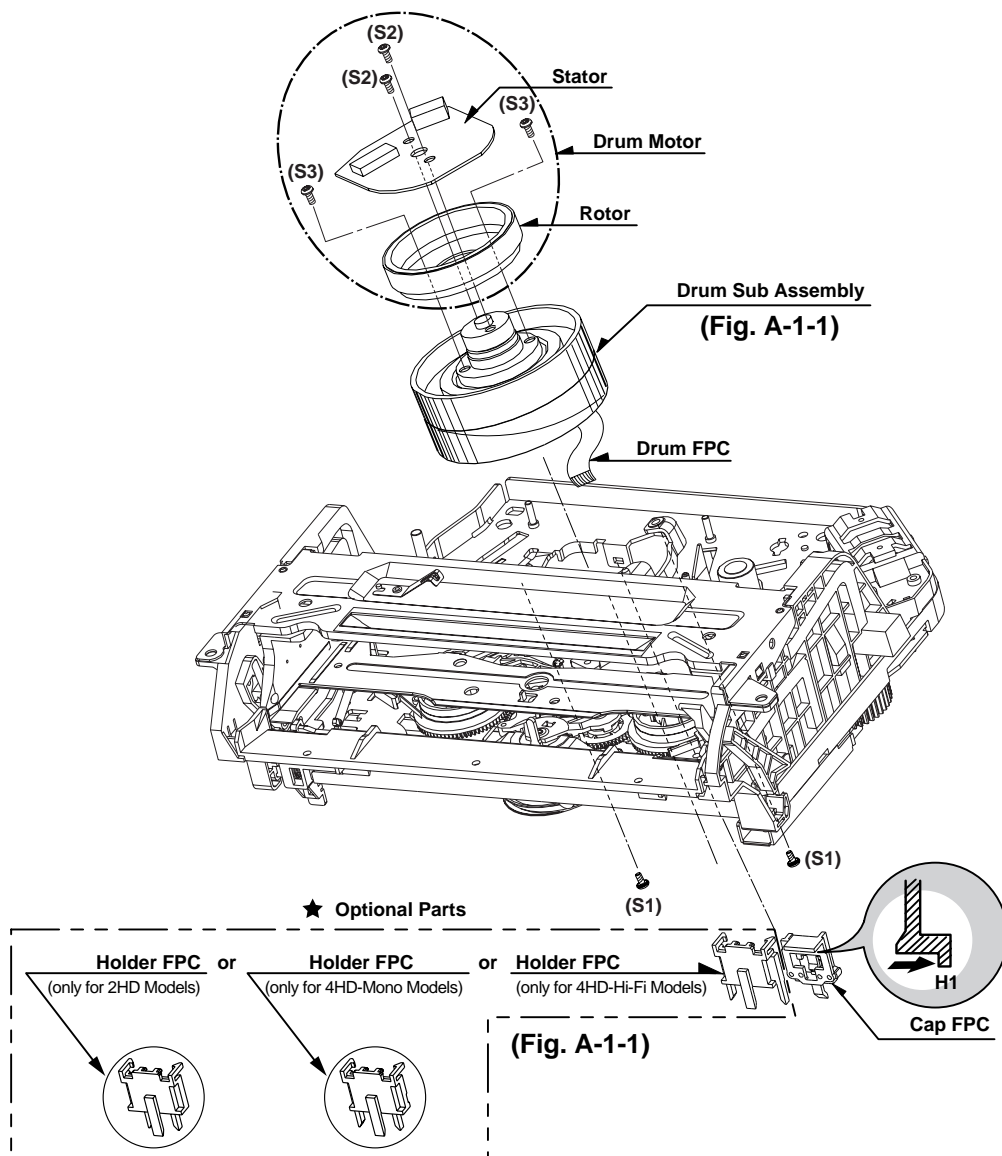


Fig. A-1

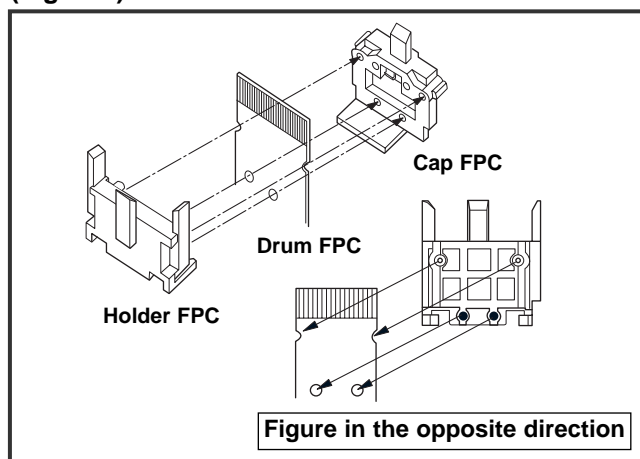
1. Drum Assembly (Fig. A-1-1)

- 1) Unhook the (H1) on the back side of the Chassis and separate the Cap FPC.
- 2) Remove three Screws (S1) and lift up the Drum Assembly.
- 3) Remove two Screws (S2) and Separate the Stator of Drum Motor.
- 4) Remove two Screws (S3) and Separate the Rotor of Drum Motor from the Drum Sub Assembly.

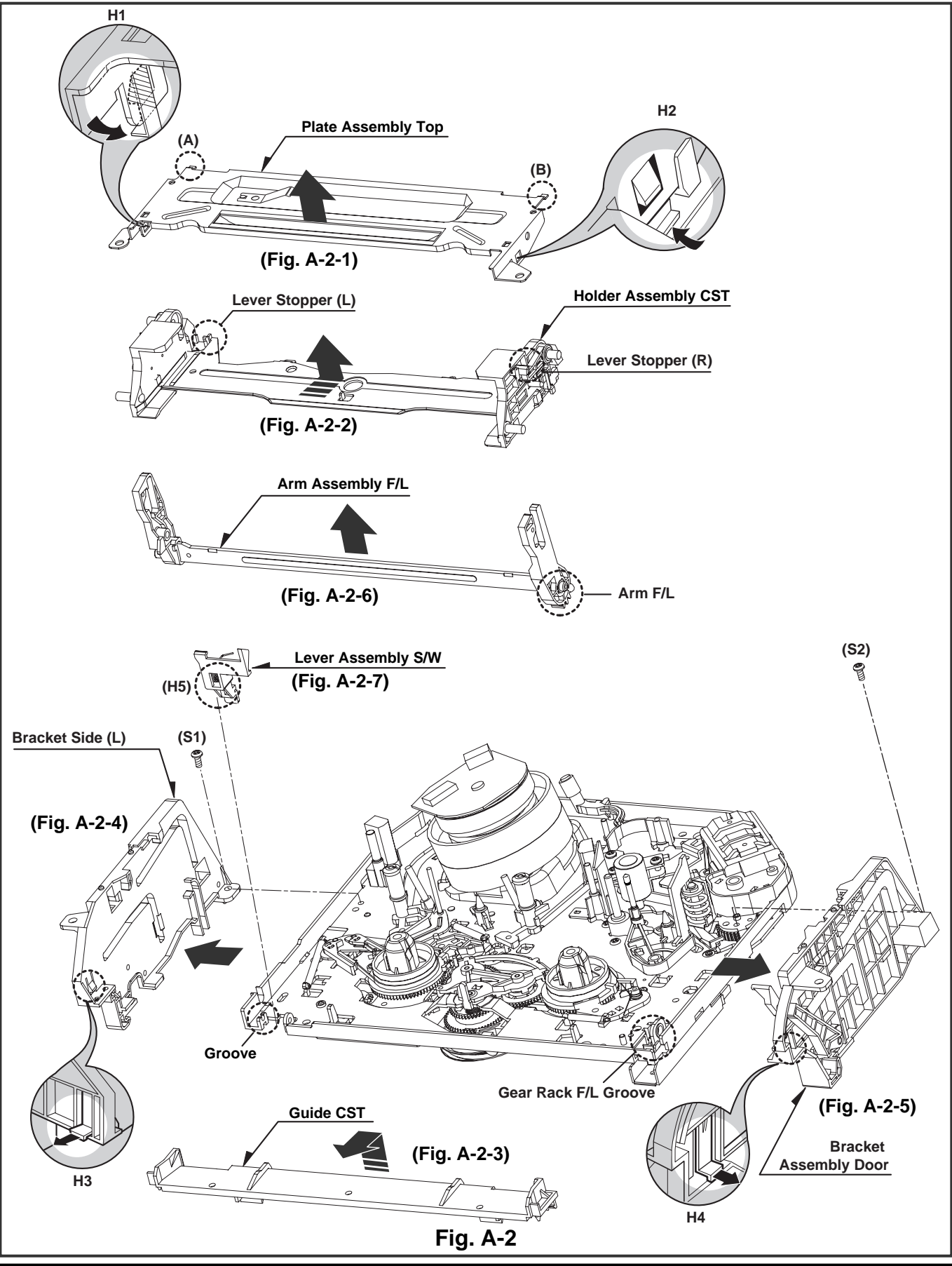
NOTE

- (1) When reassembling Cap FPC, two Holes of Drum FPC are inserted to the two Bosses of Holder FPC correctly. (Refer to Fig. B-1)

(Fig. B-1)



DECK MECHANISM DISASSEMBLY



DECK MECHANISM DISASSEMBLY

2. Plate Assembly Top (Fig. A-2-1)

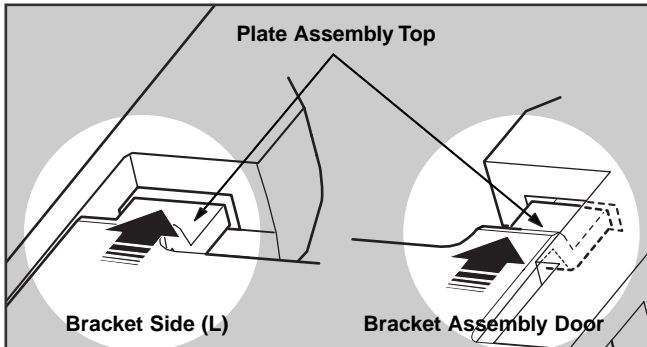
- 1) Unhook the (H1) and separate the Left Side.
- 2) Unhook the (H2) and lift up the Plate Assembly Top.

NOTE

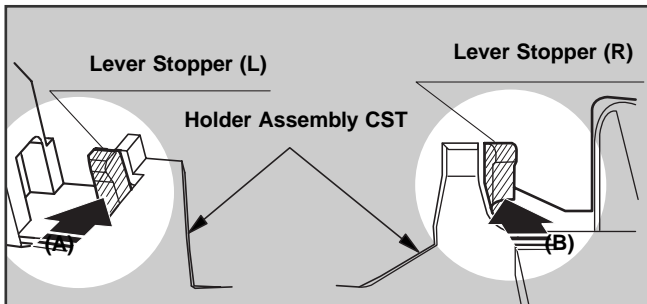
- (1) When reassembling, confirm (A),(B) Part of the Plate Assembly Top is inserted to the (L),(R) Grooves of the Bracket Side(L) and Bracket Assembly Door.

3. Holder Assembly CST (Fig.A-2-2)

- 1) Push the Lever Stopper(L),(R) in the direction of the arrows (A), (B), and move the Holder Assembly CST.

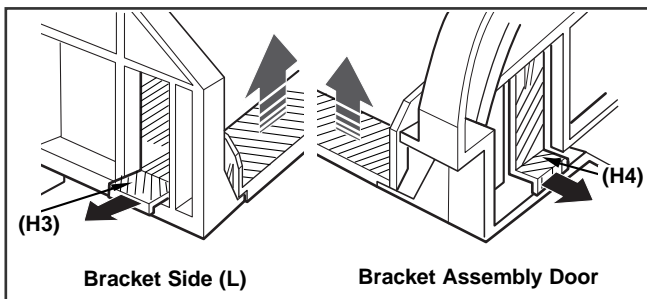


- 2) Push the Bracket Assembly Door to the right and lift up the Holder Assembly CST along the Guide Groove of the Bracket Assembly Door.



4. Guide CST (Fig.A-2-3)

- 1) Push two Hooks(H3),(H4) in the direction of the arrow and separate the left side.
- 2) Unhook (H5),(H6) as above No.1) and disassemble the Guide CST in the direction of the arrow.



5. Bracket Side(L) (Fig. A-2-4)/ Bracket Assembly Door (Fig.A-2-5)

- 1) Remove the Screw (S1) and disassemble the Bracket Side(L) in the front.

- 2) Remove the Screw (S2) and disassemble the Bracket Assembly Door in the front.

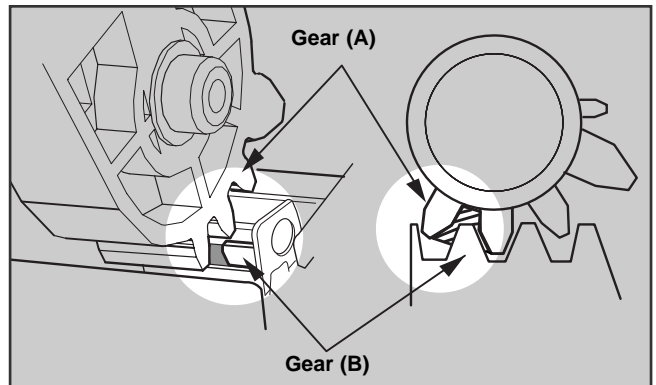
6. Arm Assembly F/L (Fig. A-2-6)

- 1) Push the Arm Assembly F/L to the left and lift up it.

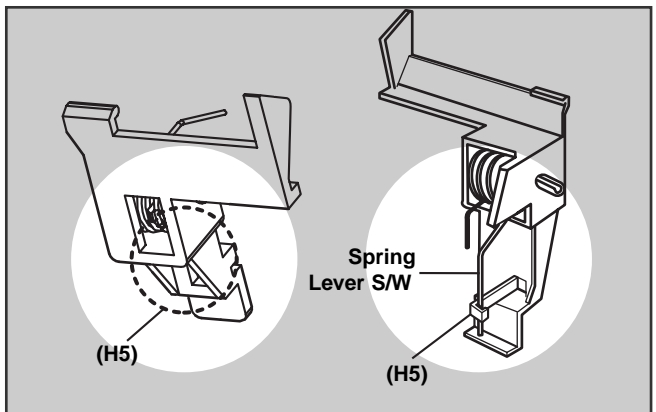
NOTE

- (1) When reassembling, confirm that the Gear(A) of the Arm F/L and the Gear(B) of the Gear Rack F/L are assembled as below.

7. Lever Assembly S/W (Fig. A-2-7)

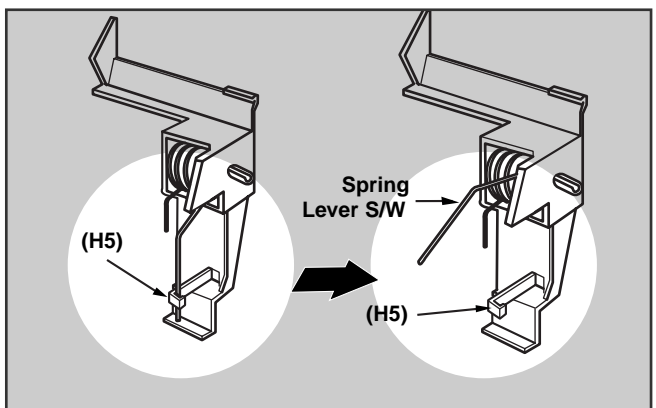


- 1) Hook the Spring Lever S/W on (H5).
- 2) Lift up the left side of the Lever S/W from the Groove(A) of the Chassis.



NOTE

- (1) Place the Spring Lever S/W of the above (No.1) as original position.



DECK MECHANISM DISASSEMBLY

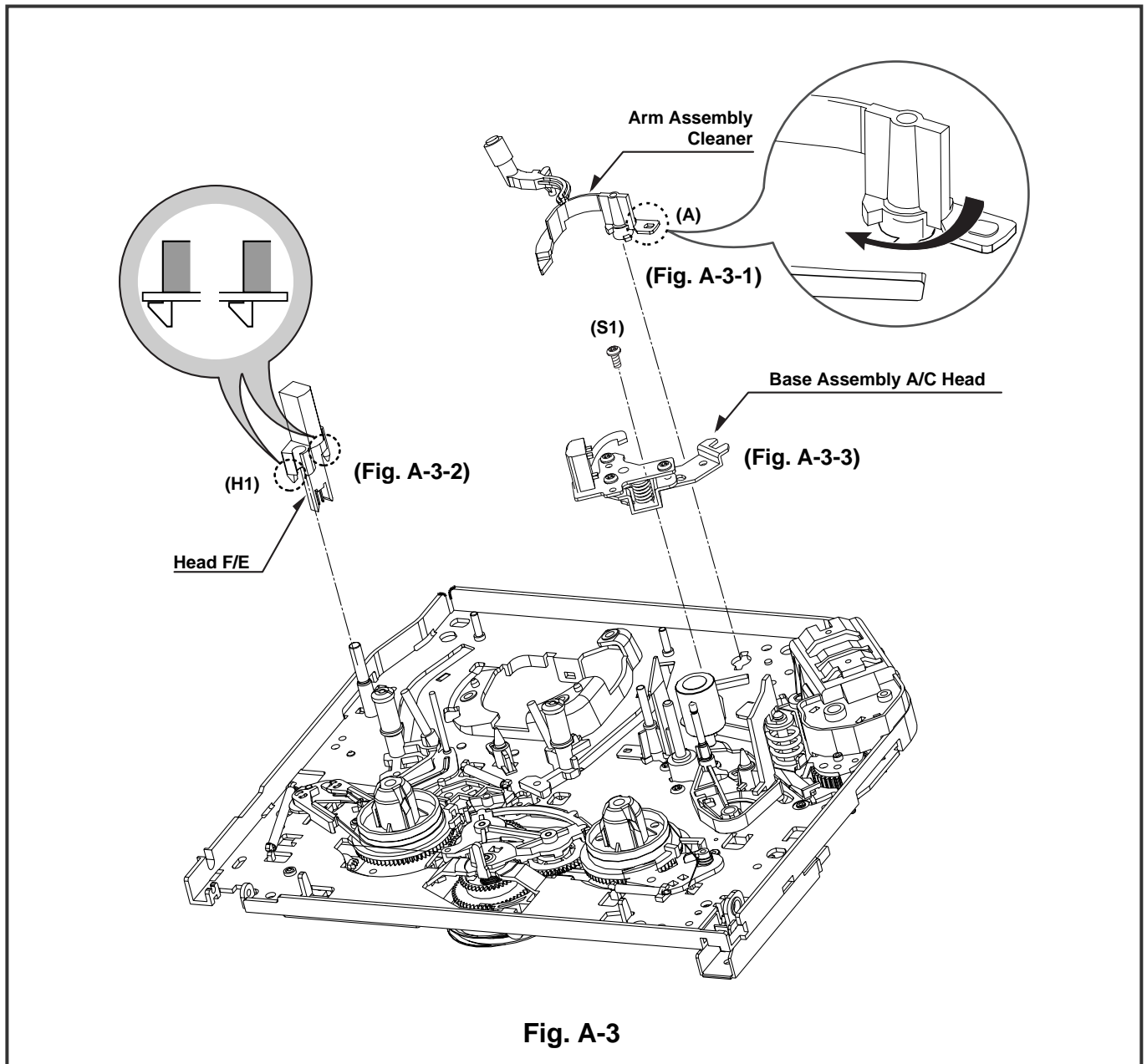


Fig. A-3

8. Arm Assembly Cleaner(Fig. A-3-1)

- 1) Break away the (A) part shown above Fig. A-3-1 from the Embossing of the Chassis in the clockwise direction and lift up the Arm Assembly Cleaner.

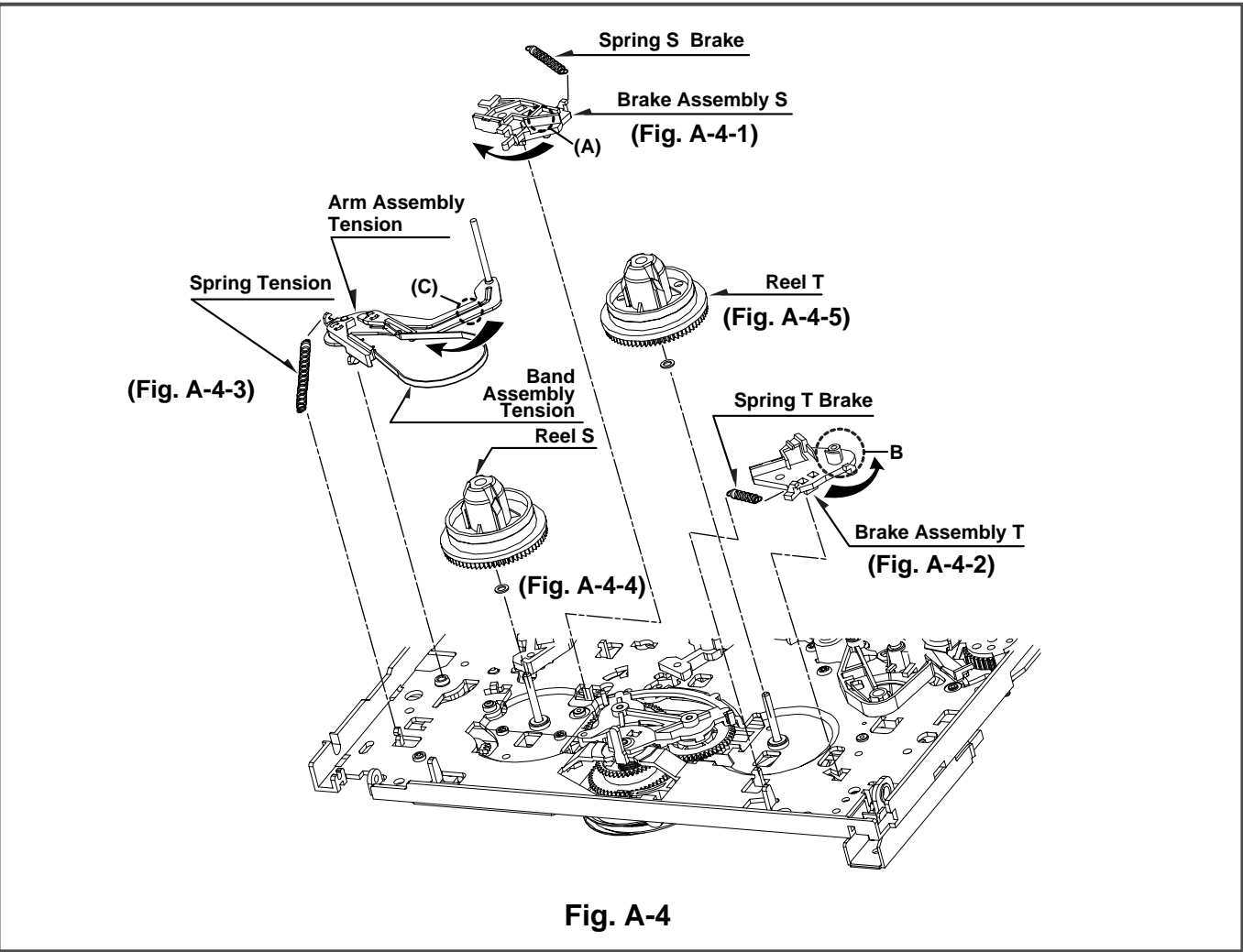
9. Head F/E (Fig. A-3-2)

- 1) Unhook the two Hooks (H1) on the back side of the Chassis and lift up the Head F/E.

10. Base Assembly A/C Head (Fig. A-3-3)

- 1) Remove the Screw (S1) and lift up the Base Assembly A/C Head.

DECK MECHANISM DISASSEMBLY



11. Brake Assembly S (Fig. A-4-1)

- 1) Remove the Spring S Brake.
- 2) Hold the (A) part shown above Fig. A-4-1 and turn to the clockwise direction, and then lift up the Brake Assembly S.

NOTE

- (1) When reassembling, be careful not to change the Spring with below No.12.(Refer to Fig. B-2).




12. Brake Assembly T (Fig. A-4-2)

- 1) Remove the Spring T Brake.
- 2) Hold the (B) part shown above Fig. A-4-2 and turn to the counterclockwise direction, and then lift up the Brake Assembly T.

NOTE

- (1) When reassembling, be careful not to change the Spring with above No.11.(Refer to Fig. B-2).

(Difference for Springs) (Fig. B-2)

	Spring T Brake Color (Black)
	Spring S Brake
	Spring Tension

13. Arm Assembly Tension (Fig. A-4-3)

- 1) Remove the Spring Tension.
- 2) Hold the (C) part shown above Fig. A-4-3 and turn to the clockwise direction, and then lift up the Arm Assembly Tension.

NOTE

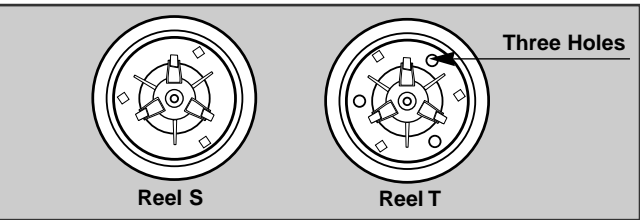
- (1) When reassembling, be careful not to change the Spring with above No.11,12.(Refer to Fig. B-2).

14. Reel S (Fig. A-4-4) & Reel T (Fig. A-4-5)

- 1) Lift up the Reel S and Reel T.

NOTE

- (1) When reassembling, be careful not to change the Reel S and Reel T each other.



- (2) Confirm two Slide Washers under the Reel S and Reel T.

DECK MECHANISM DISASSEMBLY

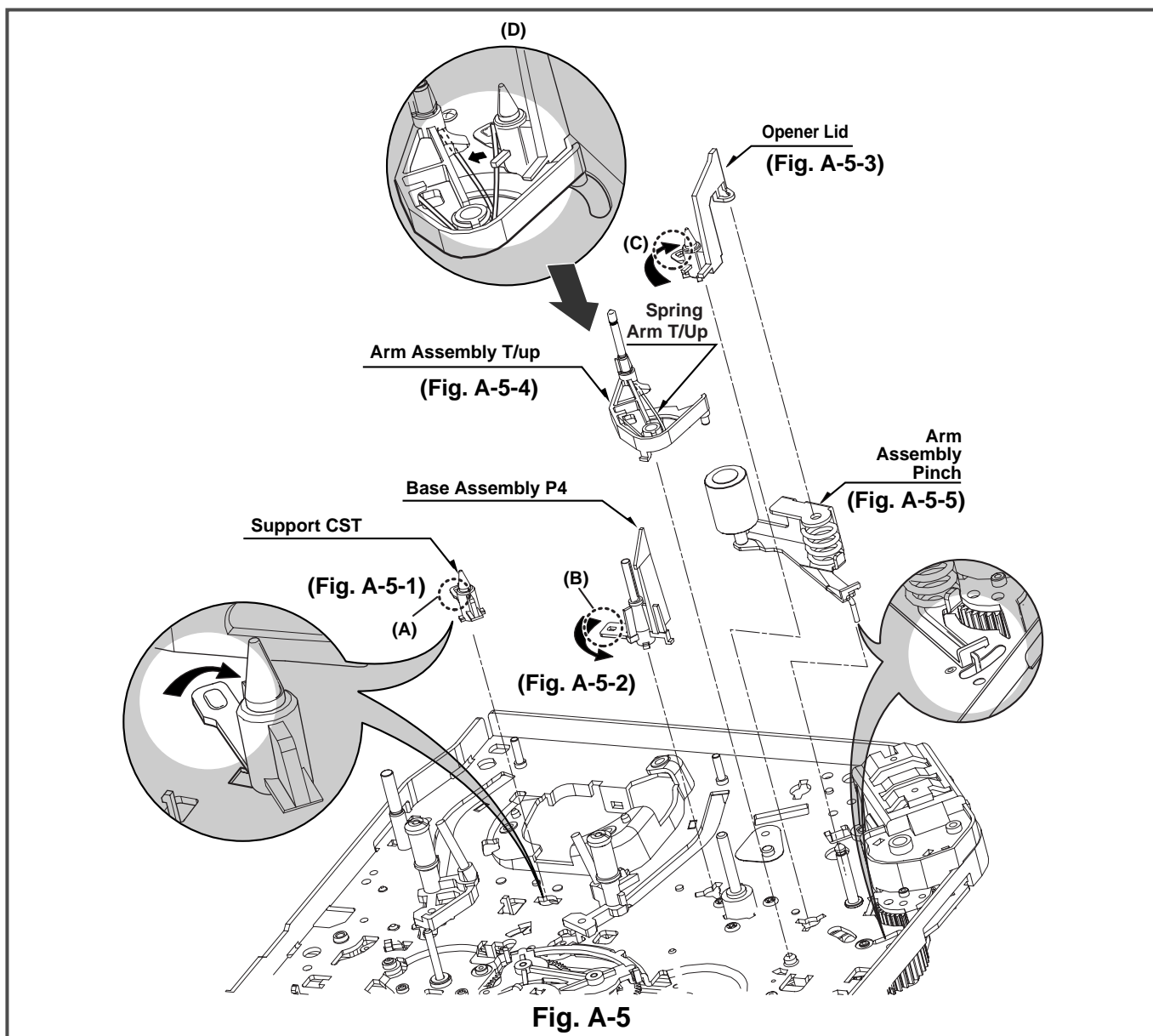


Fig. A-5

15. Support CST (Fig. A-5-1)

- 1) Break away the (A) part shown above Fig. A-5-1 from the Embossing of the Chassis in the clockwise direction, and lift up the Support CST.

16. Base Assembly P4 (Fig. A-5-2)

- 1) Break away the (B) part shown above Fig. A-5-2 from the Embossing of the Chassis in the counterclockwise direction and lift up the Base Assembly P4.

17. Opener Lid (Fig. A-5-3)

- 1) Hook the Spring Arm T/up on the Split digged under the Arm Assembly T/up.(Refer to Fig.A-5-4(D)).
- 2) Break away the (C) Part of the Opener Lid from the Embossing of the Chassis in the Clockwise direction and lift up the Opener Lid.

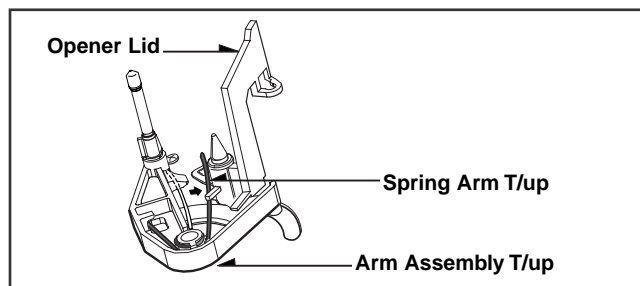
18. Arm Assembly T/up (Fig. A-5-4)

- 1) Confirm that the Spring Arm T/up is placed as above (No.17.1).

- 2) Lift up the Arm Assembly T/up.

NOTE

- (1) When reassembling, unhook the Spring Arm T/up Shown above (No.17.1) to the original position.



19. Arm Assembly Pinch (Fig. A-5-5)

- 1) Lift up the Arm Assembly Pinch.

DECK MECHANISM DISASSEMBLY

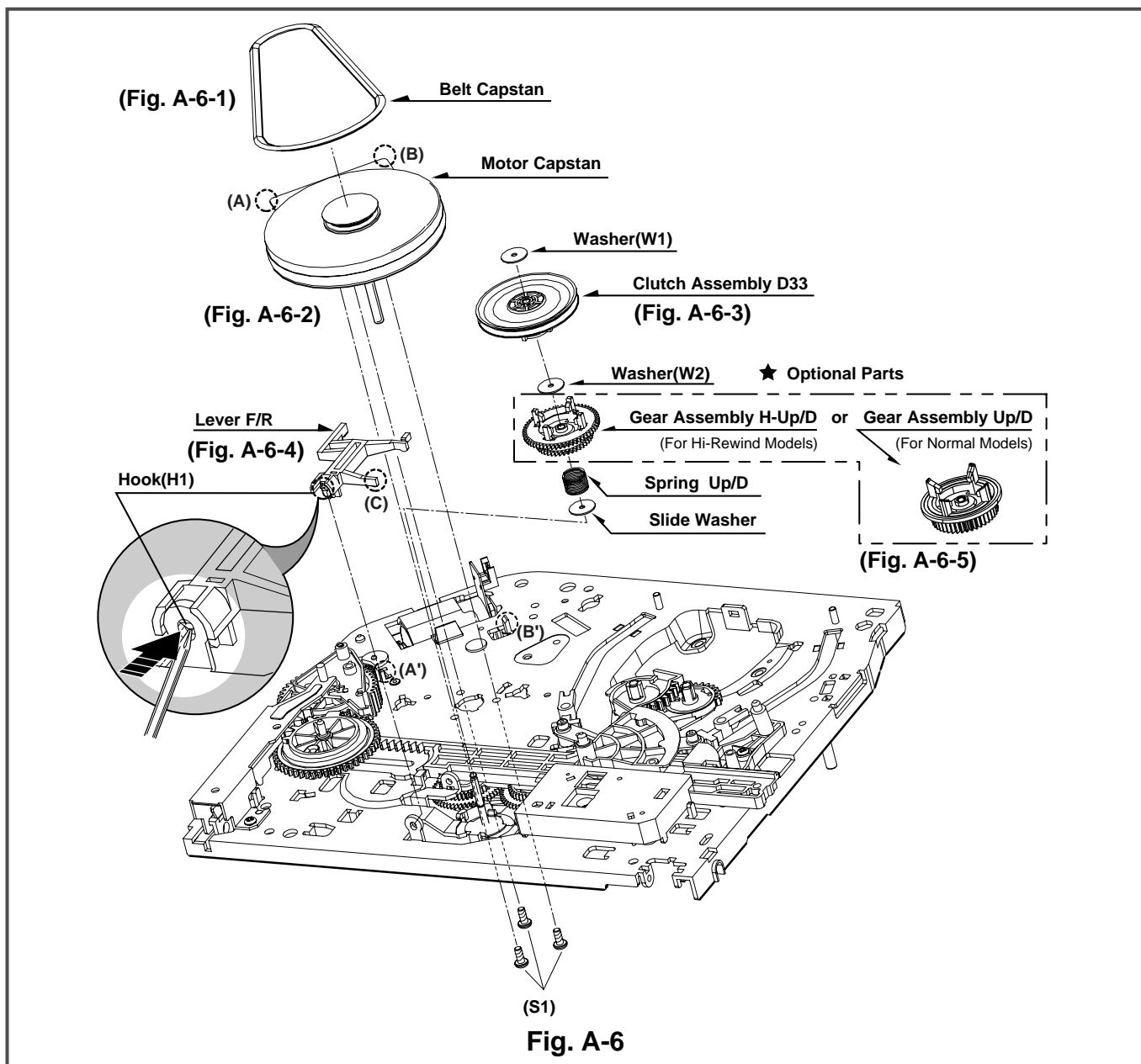


Fig. A-6

20. Belt Capstan (Fig. A-6-1)/ Motor Capstan (Fig. A-6-2)

- 1) Remove the Belt Capstan.
- 2) Remove three Screws(S1) on the back side of the Chassis and lift up the Motor Capstan.

NOTE

- (1) When reassembling, Confirm the (A), (B) parts of Motor Capstan is located to the (A'), (B') of the Chassis.

21. Clutch Assembly D33 (Fig. A-6-3)

- 1) Remove the Washer(W1) and lift up the Clutch Assembly D33.

22. Lever F/R (Fig. A-6-4)

- 1) Unhook the (H1) shown above Fig. A-6-4 and lift up the Lever F/R.

NOTE

- (1) When reassembling, move the (C) part of the Lever F/R up and down, then confirm if it is returned to original position.

23. Gear Assembly H-Up/D or Gear Assembly Up/D (Fig. A-6-5)

- 1) Remove the Washer(W2) and lift up the Gear Assembly H-up/D.
- 2) Remove the Spring Up/D.
- 3) Remove the Slide Washer.

NOTE

- (1) Gear Assembly H-Up/D is for Hi-Rewind Models.
- (2) Gear Assembly Up/D is for Normal Models except Hi-Rewind Models.

DECK MECHANISM DISASSEMBLY

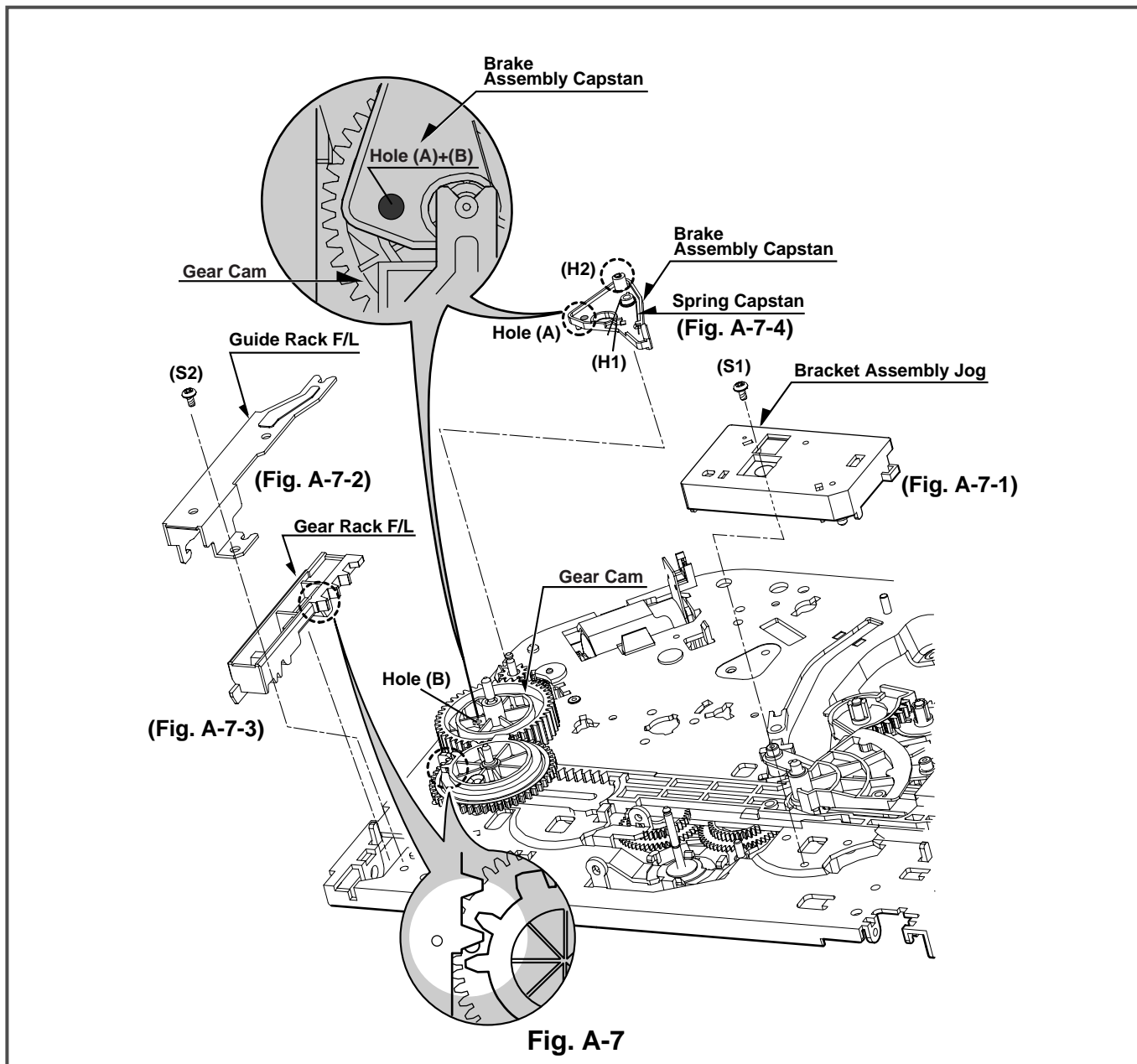


Fig. A-7

24. Bracket Assembly Jog (Fig. A-7-1)

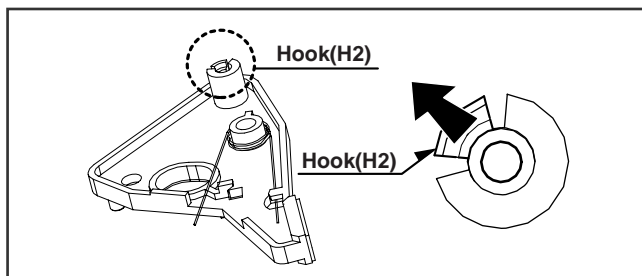
- 1) Remove the Screw(S1) and lift up the Bracket Assembly Jog.

25. Guide Rack F/L (Fig. A-7-2)/ Gear Rack F/L (Fig. A-7-3)

- 1) Remove the Screw(S2) and lift up the Guide Rack F/L.
- 2) Lift up the Gear Rack F/L.

26. Brake Assembly Capstan (Fig. A-7-4)

- 1) Hook the Spring Capstan on the Hook(H1).
- 2) Unhook the Hook(H2) and lift up the Brake Assembly Capstan.(Refer to Fig. to the right)



NOTE

- (1) When reassembling, confirm that the Hole(A) of the Brake Assembly Capstan is aligned to the Hole(B) of the Gear Cam.
(Refer to above Fig. A-7-4).

DECK MECHANISM DISASSEMBLY

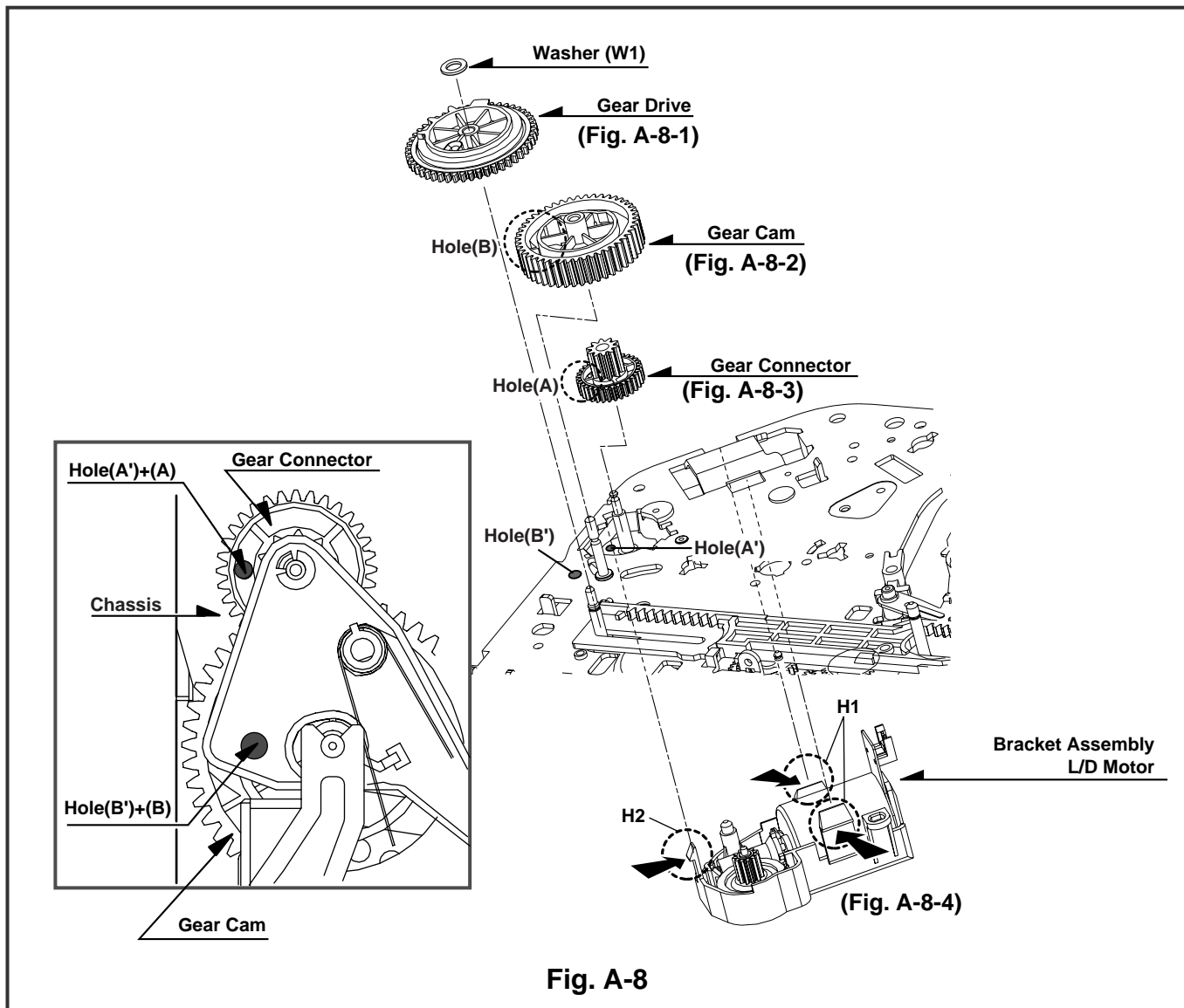


Fig. A-8

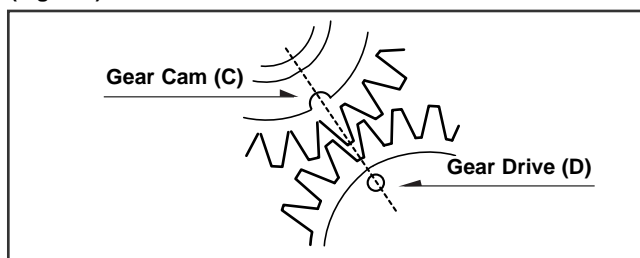
27. Gear Drive (Fig. A-8-1)/ Gear Cam (Fig. A-8-2)/ Gear Connector (Fig. A-8-3)

- 1) Remove the Washer(W1) and lift up the Gear Drive.
- 2) Lift up the Gear Cam.
- 3) Lift up the Gear Connector.

NOTE

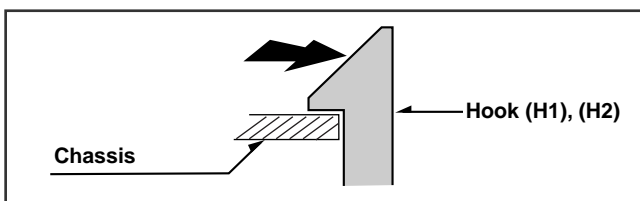
- (1) When reassembling, confirm that the Hole (A) of the Gear Connector is aligned to the Hole (A') of the Chassis (Fig. A-8-3).
- (2) When reassembling, confirm that the Hole (B) of the Gear Cam is aligned to the Hole (B') of the Chassis (Fig. A-8-2).
- (3) When reassembling, confirm that the (C) part of the Gear Cam is aligned to the (D) part of the Gear Drive as shown Fig. B-3

(Fig. B-3)

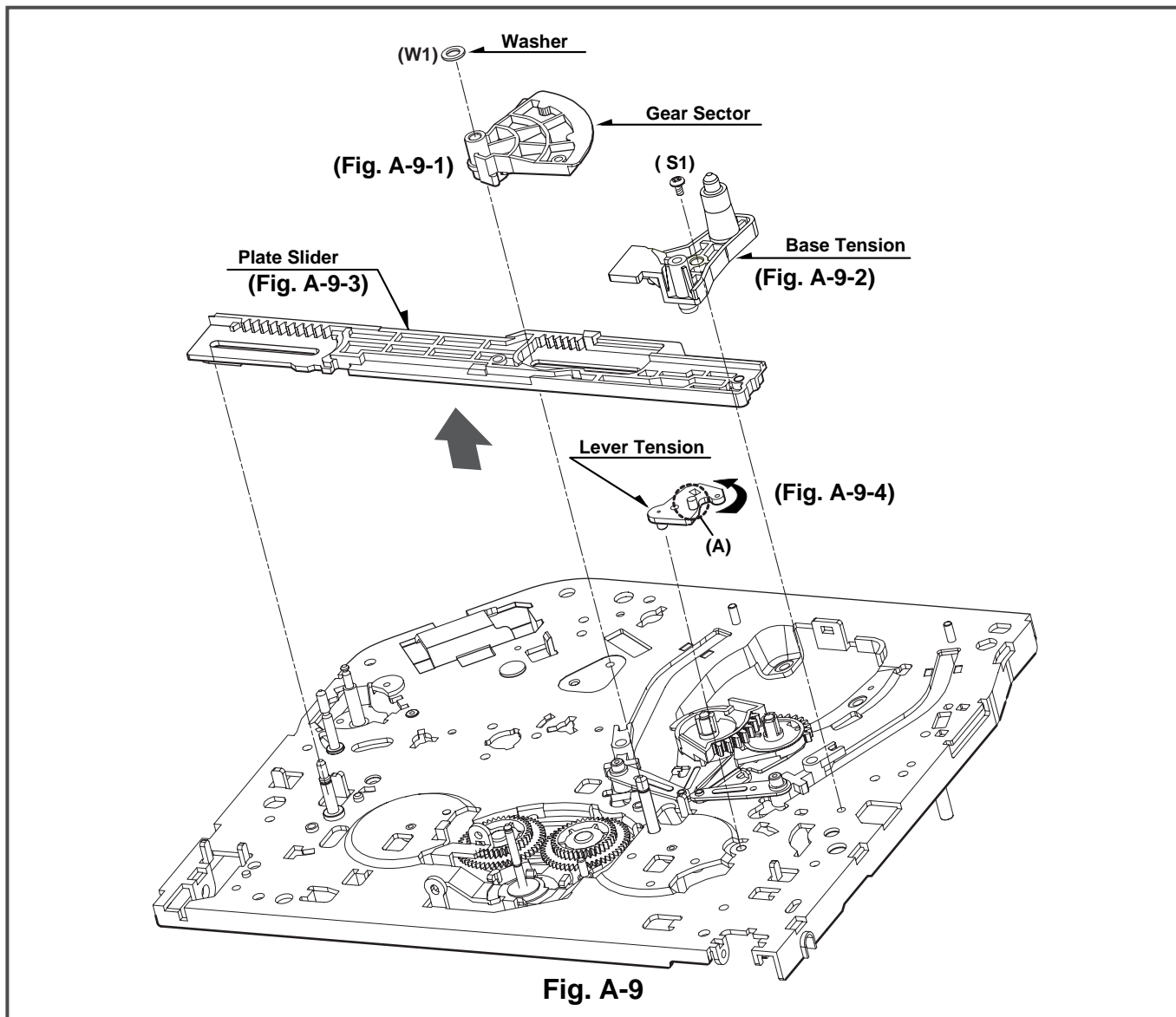


28. Bracket Assembly L/D Motor (Fig. A-8-4)

- 1) Unhook the three Hooks(H1),(H2) and push down the Bracket Assembly L/D Motor.



DECK MECHANISM DISASSEMBLY



29. Gear Sector (Fig. A-9-1)

- 1) Remove the Washer(W1) and lift up the Gear Sector.

30. Base Tension (Fig. A-9-2)/

Plate Slider (Fig. A-9-3)/

Lever Tension (Fig. A-9-4)

- 1) Remove the Screw(S1) and lift up the Base Tension.
- 2) Lift up the Plate Slider.
- 3) Hold the (A) Part of the Lever Tension and turn to the counterclockwise direction, and then lift up the Lever Tension.

NOTE

- (1) When reassembling, turn the Lever Tension to the clockwise direction in maximum.

DECK MECHANISM DISASSEMBLY

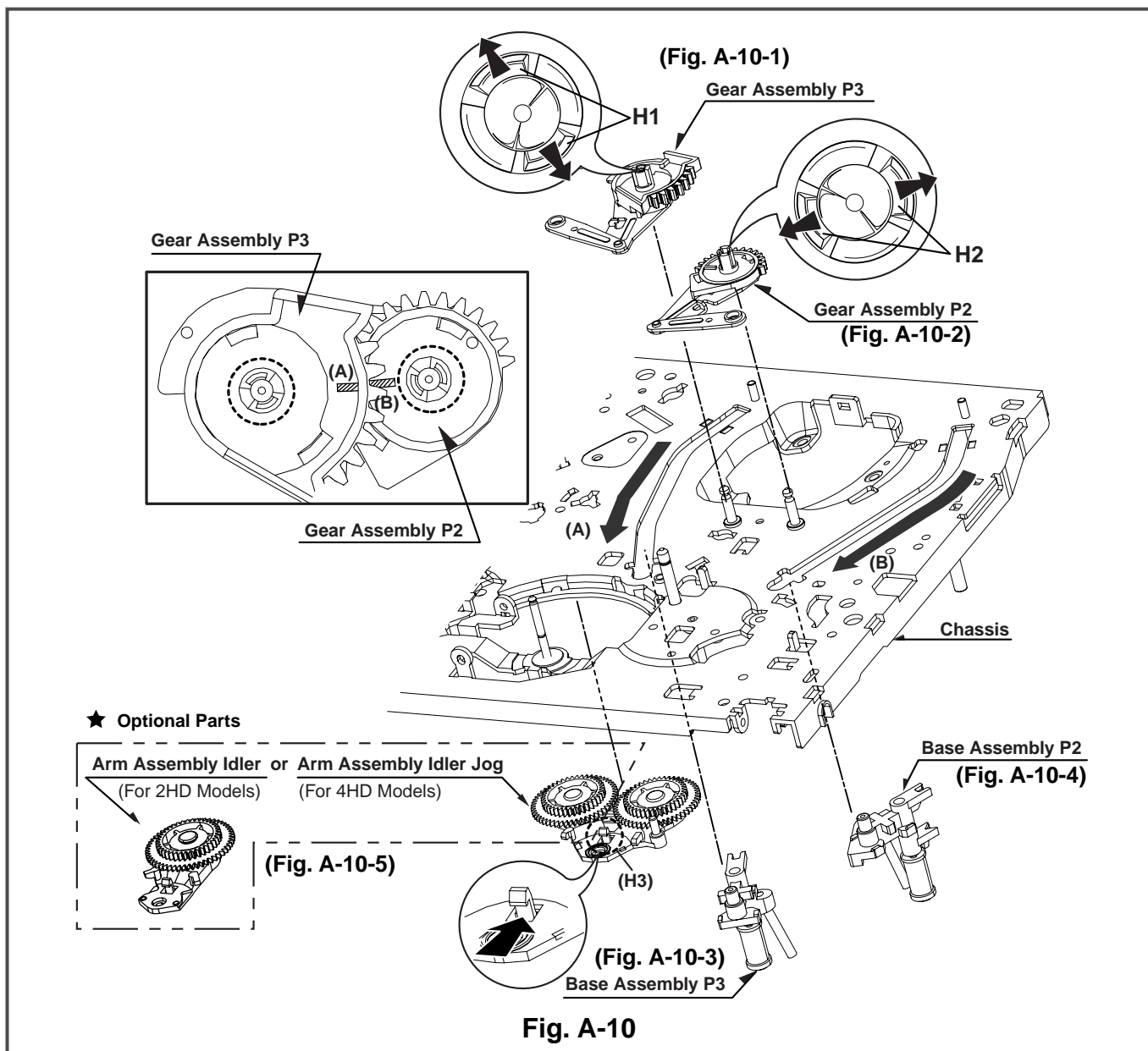


Fig. A-10

31. Gear Assembly P3 (Fig. A-10-1)/ Gear Assembly P2 (Fig. A-10-2)

- 1) Unhook the two Hooks(H1) and lift up the Gear Assembly P3.
- 2) Unhook the two Hooks(H2) and lift up the Gear Assembly P2.

32. Base Assembly P3 (Fig. A-10-3)/ Base Assembly P2 (Fig. A-10-4)

- 1) Move the Base Assembly P3 in the direction of the arrow of the Chassis Hole(A) and push down the Base Assembly P3.
- 2) Move the Base Assembly P2 in the direction of the arrow of the Chassis Hole(B) and push down the Base Assembly P2.

33. Arm Assembly Idler Jog or Arm Assembly Idler (Fig. A-10-5)

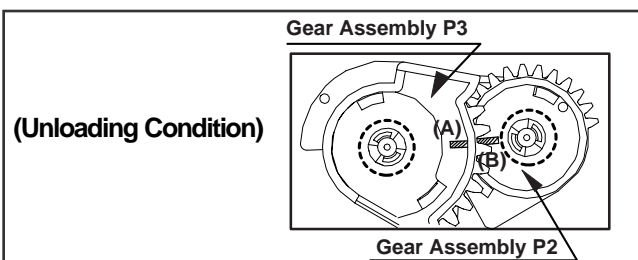
- 1) Unhook the Hook(H3) and push down the Arm Assembly Idler Jog.

NOTE

- 1) Arm Assembly Idler Jog is for 4HD Models.
- 2) Arm Assembly Idler is for 2HD Models.

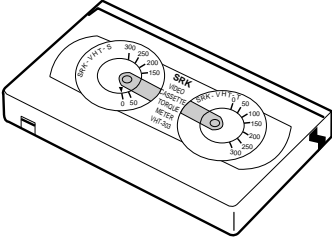
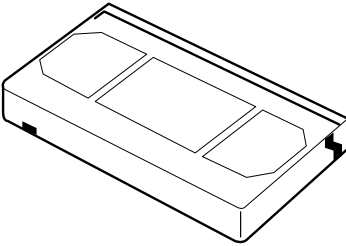
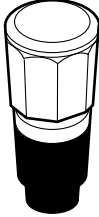
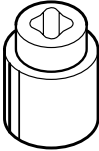
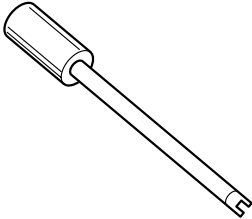
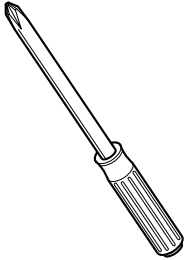
NOTE

- 1) When reassembling, confirm that the (A) Part of the Gear Assembly P3 is aligned to the (B) Part of the Gear Assembly P2 as shown below.



DECK MECHANISM ADJUSTMENT

• Tools and Fixtures for Service

1. Cassette Torque meter SRK-VHT-303(Not SVC part) 	2. Alignment tape (See figure below) 	3. Torque gauge 600g.Cm ATG 
4. Torque gauge adaptor 	5. Post height adjusting driver Parts No: SV-TGO-030-000 (SMALL) SV-TGO-020-000 (LARGE) 	6. + Type driver (ø 5) 

ALIGNMENT TAPES FOR ADJUSTMENT

Derivation No.		A	B	C	D
Mechanism		PAL	PAL	NTSC	NTSE
	Adjustment Items	SP/LP 2/4 Head	SP 2 Head	SP/LP/EP 2/4 Head	SP 2 Head
FM Envelope		TTV-P2L	TTV-P2	TTV-N1 (TTN-N12)	TTV-N2
A/C Head	Slantness	A commercially available tape			
	Height	TTV-P1 (TTV-P1L)	TTV-P1	TTV-N1 (TTV-N12) (TTV-N1E)	TTV-N1 (TTV-N12)
	Azimuth	TTV-P2	TTV-P2	TTV-N2	TTV-N2
X-value		TTV-P2 (TTV-P2L)	TTV-P2	TTV-N2 TTV-N2E TTV-N12	TTV-N2
RG Post Inclination		A commercially available tape			
Tape Back Tension		SRK-VHT-303			

The numbers in () parenthesis can be used as the substitute.

DECK MECHANISM ADJUSTMENT

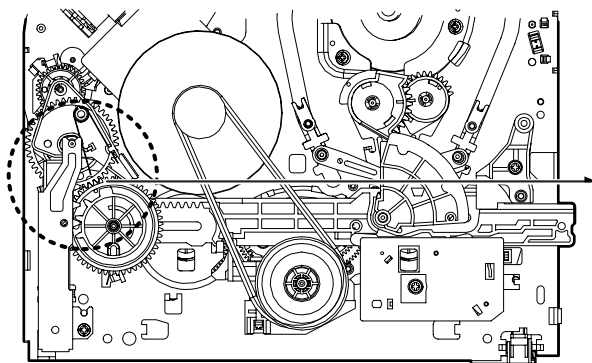
1.Mechanism Alignment Position Check

Purpose:To determine if the Mechanism is in the correct position, when a Tape is ejected.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Check Point
• Blank tape	• Eject Mode (with Cassette ejected)	• Mechanism and Mode Switch Position

- 1) Turn the Power S/W on and eject the Cassette by pressing the Eject Button.
- 2) Remove the Top Cover and Plate Assembly Top, visually check if the Gear Cam Hole is aligned with the Chassis Hole as below Fig. C-2.
- 3) IF not, rotate the Shaft of the Loading Motor to either Clockwise or Counterclockwise until the Alignment is as below Fig. C-2.
- 4) Remove the Screw which fixes the Deck Mechanism and Main Frame and confirm if the Gear Cam is aligned with the Gear Drive as below Fig. C-1(A).
- 5) Confirm if the Mode S/W on the Main P.C.Board is aligned as below Fig. C-1(B).
- 6) Remount the Deck Mechanism on the Main P.C.Board and check each operation.

CHECK DIAGRAM



BOTTOM VIEW

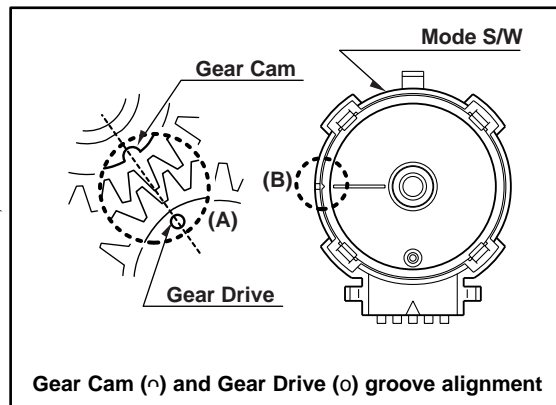
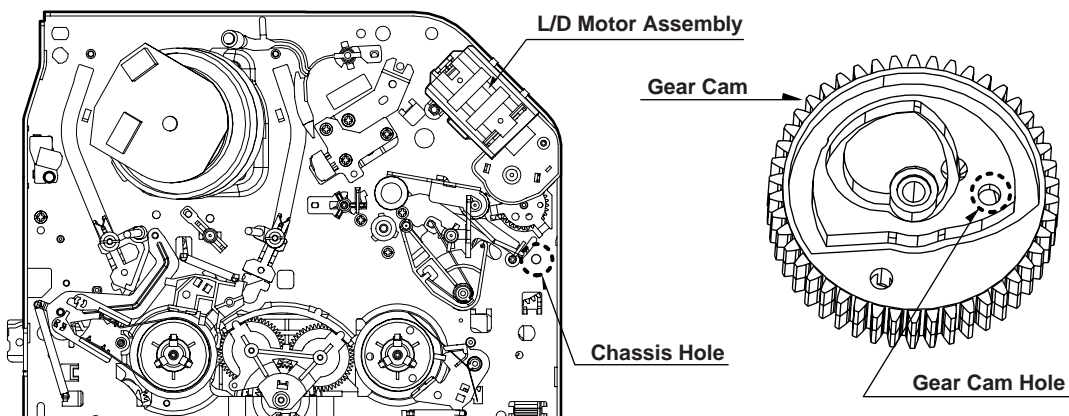


Fig. C-1



TOP VIEW

Fig. C-2

DECK MECHANISM ADJUSTMENT

2. Preparation for Adjustment (To set the Deck Mechanism to the Loading state without inserting a Cassette Tape).

- 1) Unplug the Power Cord from the AC Outlet.
- 2) Disassemble the Top Cover and Plate Assembly Top.
- 3) Plug the Power Cord into the AC Outlet.
- 4) Turn the Power S/W on and push the Lever Stopper (L),(R) of the Holder Assembly CST to the back for Loading the

Cassette without Tape.

Cover the Holes of the End Sensors at the both sides of the Bracket Side(L) and Bracket Assembly Door to prevent a light leak.

Then The Deck Mechanism drives to the Stop Mode.

In this case, The Deck Mechanism can accept inputs of each mode, however the Rewind and Review Operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

3. Checking Torque

Purpose: To insure smooth Transport of the Tape during each Mode of Operation.

If the Tape Transport is abnormal, then check the Torque as indicated by the chart below.

Test Equipment/ Fixture		Test Conditions (Mechanism Condition)	Checking Method	
<ul style="list-style-type: none">• Torque Gauge(600g/cm ATG)• Torque Gauge Adaptor• Cassette Torque Meter SRK-VHT-303		<ul style="list-style-type: none">• Play (FF) or Review (REW) Mode	<ul style="list-style-type: none">• Perform each Deck Mechanism Mode without inserting a Cassette Tape(Refer to above No.2 Preparation for Adjustment).• Read the Measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2).• Attach the Torque Gauge Adaptor to the Torque Gauge and then read the Value of it(Fig. C-3-1).	
Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	75~115g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	130~200g/m

NOTE:

The Values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed.

• Cassette Torque Meter (SRK-VHT-303)

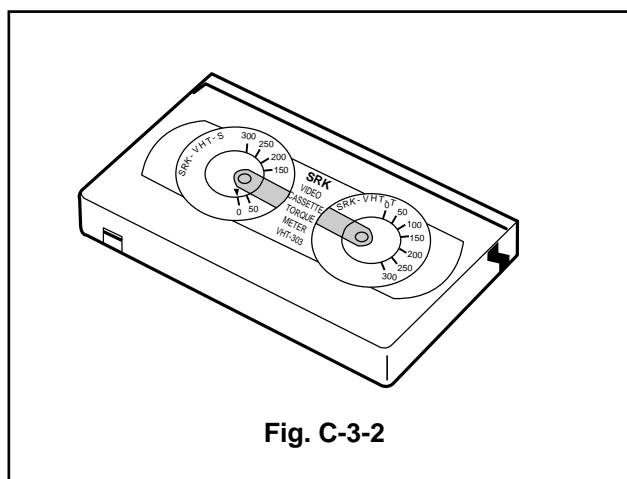


Fig. C-3-2

NOTE:

The Torque reading to measure occurs when the Tape abruptly changes direction from Fast Forward of Rewind Mode, when quick bracking is applied to both Reels.

• Torque Gauge (600g.cm ATG)

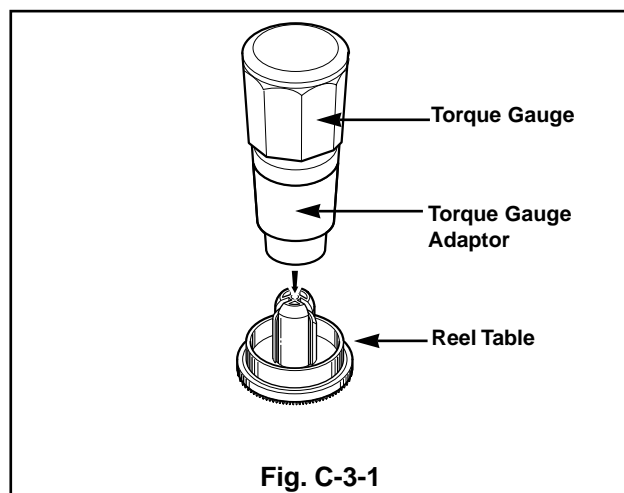


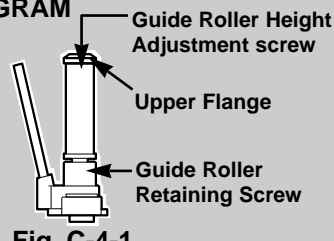
Fig. C-3-1

DECK MECHANISM ADJUSTMENT

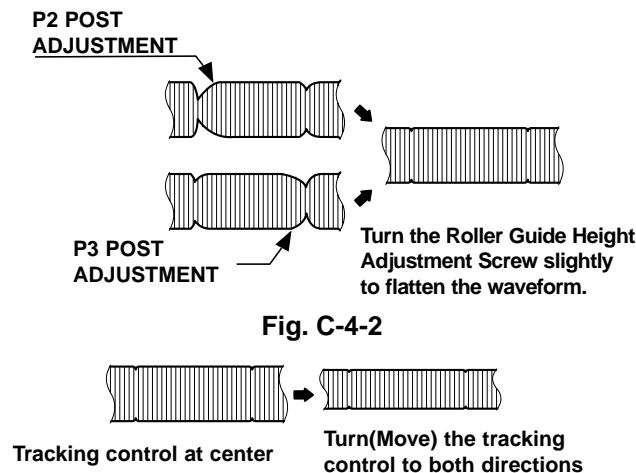
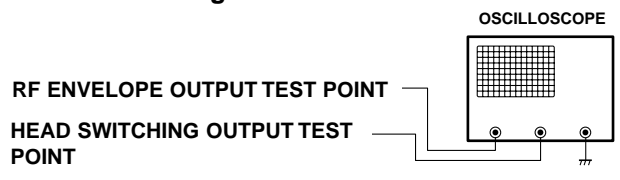
4. Guide Roller Height Adjustment

Purpose: To regulate the Height of the Tape so that the Bottom of the Tape runs along the Tape Guide Line on the Lower Drum.

4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> Post Height Adjusting Driver 	<ul style="list-style-type: none"> Play or Review Mode 	<ul style="list-style-type: none"> Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.
Adjustment Procedure <ol style="list-style-type: none"> 1) Confirm if the Tape runs along the Tape Guide Line of the Lower Drum. 2) If the Tape runs the Bottom of the Guide Line, turn the Guide Roller Height Adjustment Screw to Clockwise direction. 3) If it runs the Top, turn to Counterclockwise direction. 4) Adjust the Height of the Guide Roller to be guided to the Guide Line of the Lower Drum from the Starting and Ending Point of the Drum. 		ADJUSTMENT DIAGRAM  <p>Fig. C-4-1</p>

4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
<ul style="list-style-type: none"> Oscilloscope Alignment Tape Post Height Adjusting Driver 	<ul style="list-style-type: none"> CH-1:PB RF Envelope CH-2:NTSC: SW 30Hz PAL: SW 25Hz Head Switching Output Point RF Envelope Output Point 	<ul style="list-style-type: none"> Play an Alignment Tape 	<ul style="list-style-type: none"> Guide Roller Height Adjustment Screws
Adjustment Procedure <ol style="list-style-type: none"> 1) Play an Alignment Tape after connecting the Probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point. 2) Tracking Control(in PB Mode) : Center Position(When this Adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum). 3) Height Adjustment Screw : Flatten the RF Waveform. (Fig. C-4-2) 4) Turn(Move) the Tracking Control(in PB Mode) Clockwise and Counterclockwise.(Fig. C-4-3) 5) Check that any Drop of RF Output is uniform at the Start and End of the Waveform. 		Waveform Diagrams  <p>Fig. C-4-2</p> <p>Fig. C-4-3</p>	
NOTE <p>If the adjustment is excessive or insufficient the tape will jam or fold.</p>		Connection Diagram 	

DECK MECHANISM ADJUSTMENT

5. Audio/Control (A/C) Head Adjustment

Purpose: To insure that the Tape passes accurately over the Audio and Control Tracks in exact Alignment in both the Record and Playback Modes.

5-1. Preliminary Adjustment (Height and Tilt Adjustment)

Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> Blank Tape Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> Play the blank tape 	<ul style="list-style-type: none"> Tilt Adjustment Screw(C) Height Adjustment Screw(B) Azimuth Adjustment Screw(A)

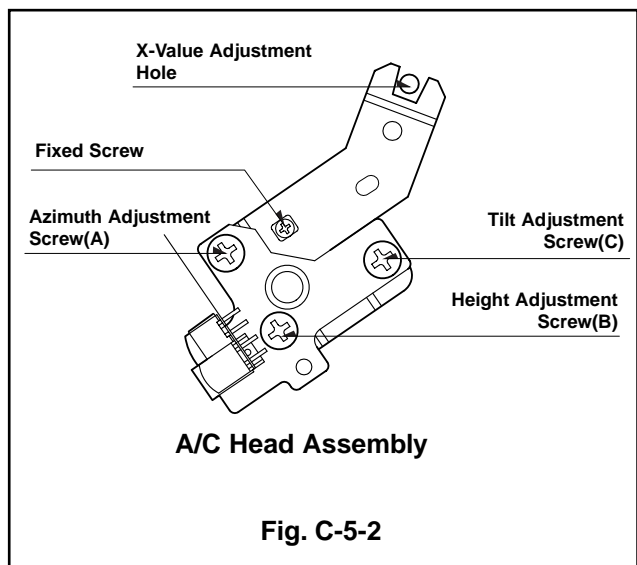
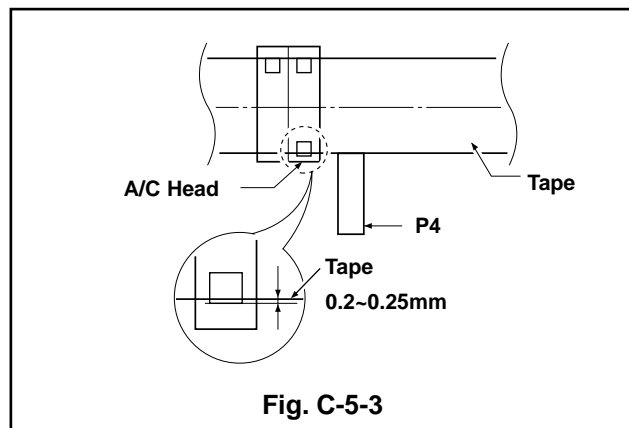
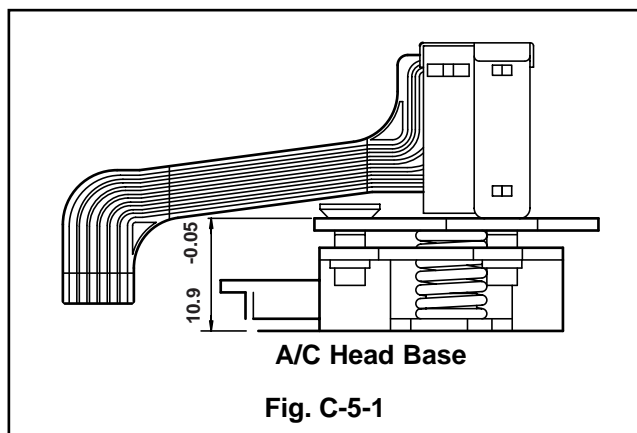
Adjustment Procedure/Diagrams

- Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).
- Play a Blank Tape and observe if the Tape passes accurately over the A/C Head without Tape Curling or Folding.
- If Folding or Curling is occurred then adjust the Tilt Adjustment Screw(C) while the Tape is running to resemble Fig. C-5-3.

- Reconfirm the Tape Path after Playback about 4~5 seconds.

NOTE

Ideal A/C head height occurs, when the tape runs between 0.2~0.25mm above the bottom edge of the A/C head core.



DECK MECHANISM ADJUSTMENT

5-2. Confirm that the Tape passes smoothly between the Take-up Guide and Pinch Roller(using a Mirror or the naked eye).

- 1) After completing Step 5-1.(Preliminary Adjustment), check that the Tape passes around the Take-up Guide and Pinch Roller without Folding or Curling at the Top or Bottom.
 - (1) If Folding or Curling is observed at the Bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the Clockwise direction.
 - (2) If Folding or Curling is observed at the Top of it then

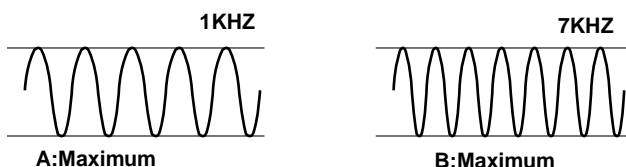
slowly turn the Tilt Adjustment Screw(C) in the Counterclockwise direction.

NOTE:

Check the RF Envelope after adjusting the A/C Head, if the RF Waveform differs from Fig. C-5-4, performs Precise Adjustment to flat the RF Waveform.

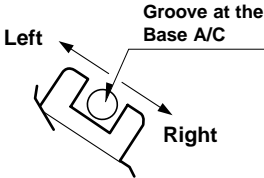
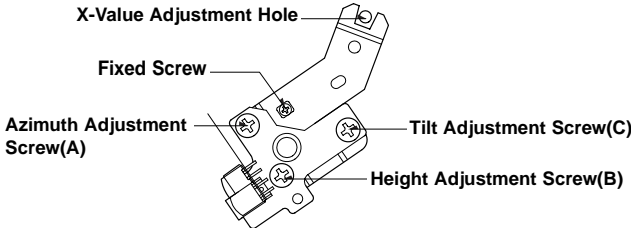
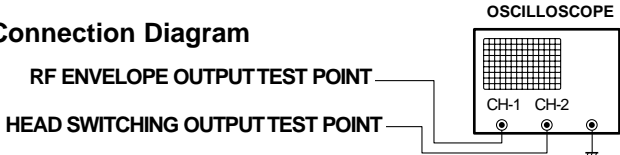
5-3. Precise Adjustment (Azimuth adjustment)

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> Oscilloscope Alignment Tape(SP) Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> Audio output jack 	<ul style="list-style-type: none"> Play an Alignment Tape 1KHz, 7KHz Sections 	<ul style="list-style-type: none"> Azimuth Adjustment Screw(A) Height Adjustment Screw(B)
Adjustment Procedure <ol style="list-style-type: none"> 1) Connect the Probe of the Oscilloscope to Audio Output Jack. 2) Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for Maximum Output of the 1KHz and 7KHz segments, while maintaining the flattest Envelope differential between the two Frequencies. 			



6. X-Value Adjustment

Purpose: To obtain compatibility with other VCR(VCP) Models.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none">• Oscilloscope• Alignment tape(SP only)• Screw Driver(+) Type 5mm	<ul style="list-style-type: none">• CH-1: PB RF Envelope• CH-2: NTSC: SW 30Hz PAL: SW 25Hz• Head Switching Output Test Point• RF Envelope Output Test Point	<ul style="list-style-type: none">• Play an Alignment Tape	
Adjustment Procedure <ol style="list-style-type: none">1) Release the Automatic Tracking to run long enough for Tracking to complete its Cycle. Tracking center position.2) Loosen the Fixed Mounting Screw and move the Base Assembly A/C Head in the direction as shown in the Diagram to find the center of the peak that allows for the maximum Waveform Envelope. This method should allow the 31um Head to be centrally located over the 58um Tape Track.3) Tighten the Base Assembly A/C Head mounting Screw.		Adjustment Diagram 	
		Connection Diagram 	

DECK MECHANISM ADJUSTMENT

7. Adjustment after Replacing Drum Assembly (Video Heads)

Purpose: To correct for shift in the Roller Guide and X value after replacing the Drum.

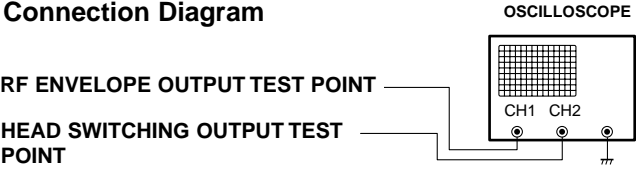
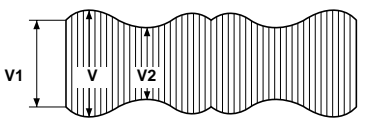
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
<ul style="list-style-type: none"> Oscilloscope Alignment tapes Blank Tape Post Height Adjusting Driver Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> CH-1: PB RF Envelope CH-2: NTSC: SW 30Hz PAL: SW 25Hz Head Switching Output Test Point RF Envelope Output Test Point 	<ul style="list-style-type: none"> Play the blank tape Play an alignment tape 	<ul style="list-style-type: none"> Guide Roller Precise Adjustment Switching Point Tracking Preset X-Value
Checking/Adjustment Procedure Play a blank tape and check for tape curling or creasing around the roller guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".		Connection Diagram  Waveform $V1/V \text{ MAX} \leq 0.7$ $V2/V \text{ MAX} \leq 0.8$ RF ENVELOPE OUTPUT 	

Fig. C-7

8. Check the Tape Travel after Reassembling Deck Assembly.

8-1.Check Audio and RF Locking Time during playback and after CUE or REV (FF/REW)

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> Oscilloscope Alignment tapes(with 6H 3kHz Color Bar Signal) Stop Watch 	<ul style="list-style-type: none"> RF Locking Time: Less than 5 sec. Audio Locking Time:Less than 10sec 	<ul style="list-style-type: none"> CH-1: PB RF Envelope CH-2: Audio Output RF Envelope Output Point Audio Ouput Jack 	<ul style="list-style-type: none"> Play an alignment tape (with 6H 3kHz Color Bar Signal)
Checking Procedure Play an alignment tape then change the operating mode to CUE or REV and confirm if the unit meets the above listed specifications.		NOTES: <ol style="list-style-type: none"> 1) CUE is fast forward mode (FF) 2) REV is the rewind mode (REW) 3) Referenced to the Play mode 	

8-2.Check for tape curling or jamming

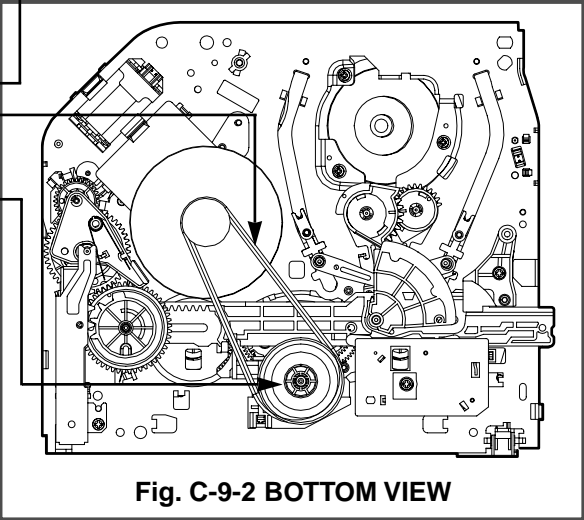
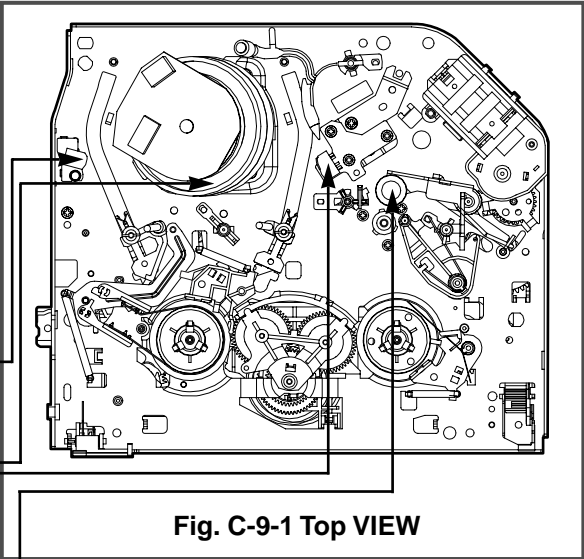
Test Equipment/ Fixture	Specification	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> T-160 Tape T-120 Tape 	<ul style="list-style-type: none"> Be sure there is no tape jamming or curling at the begining, middle or end of the tape. 	<ul style="list-style-type: none"> Run the CUE, REV play mode at the beginning and the end of the tape.
Checking Procedure <ol style="list-style-type: none"> 1) Confirm that the tape runs smoothly around the roller guides, drum and A/C head assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the begining, middle and end sections of the cassette. 2) Confirm that the tape passes over the A/C head assembly as indicated by proper audio reproduction and proper tape counter performance. 		

MAINTENANCE/INSPECTION PROCEDURE

1 Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit. Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Phenomenon	Inspection	Replace-ment	
Color beats	Dirt on full-erase head	o	F/E Head
Poor S/N, no color	Dirt on video head	o	Video Head
Vertical or Horizontal jitter	Dirt on video head Dirt on tape transport system	o	
Low volume, Sound distorted	Dirt on Audio/control head	o	A/C Head
Tape does not run. Tape is slack	Dirt on pinch roller	o	Pinch Roller
	Dirt on belt capston	o	Belt Capston
In Review and Unloading (off mode), the Tape is rolled up loosely.	Clutch Ass'y S27 Torque reduced	o	Clutch Assembly D33
	Cleaning Drum and transport system	Fig. C-9-3	



NOTE

If locations marked with **o** do not operate normally after cleaning, check for wear and replace. See the EXPLODED VIEWS at the end of this manual as well as the above illustrations See the Greasing (Page 77) for the sections to be lubricated and greased.

* No. (1)~(13) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.

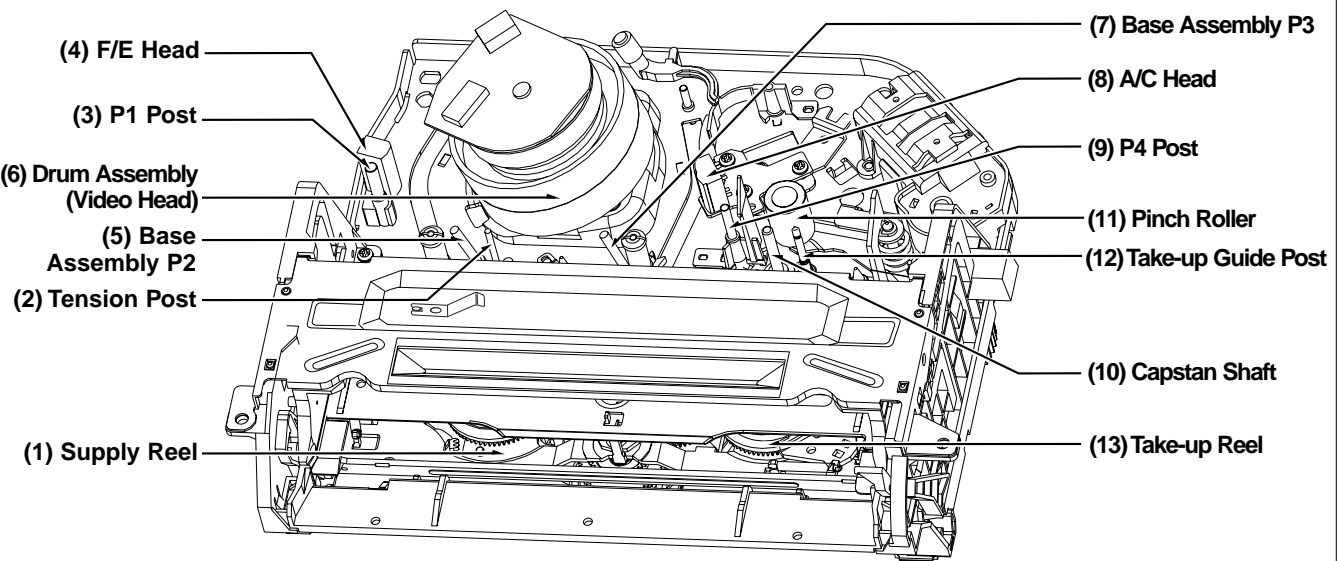


Fig. C-9-3 Tape Transport System

MAINTENANCE/INSPECTION PROCEDURE

2. Required Maintenance

The recording density of a VCR(VCP) is much higher than that of an audio tape recorder. VCR(VCP) components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, is necessary.

3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.

But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary Average hours used per day	About 1 year	About 18 months	About 3 years
One hour			
Two hours			
Three hours			

4. Supplies Required for Inspection and Maintenance

- (1) Grease : Kanto G-311G (Blue) or equivalent
- (2) Isopropyl Alcohol or equivalent
- (3) Cleaning Patches
- (4) Grease : Kanto G-381(Yellow) : Used only for Reel S and Reel T

5) Maintenance Procedure

5-1) Cleaning

- (1) Cleaning video head

First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.

(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)

Thoroughly dry the head. Then run the test tape. If Isopropyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.

- (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isopropyl Alcohol.

NOTES:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
- ② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no that force is that would cause deforming or damage applied to the system.

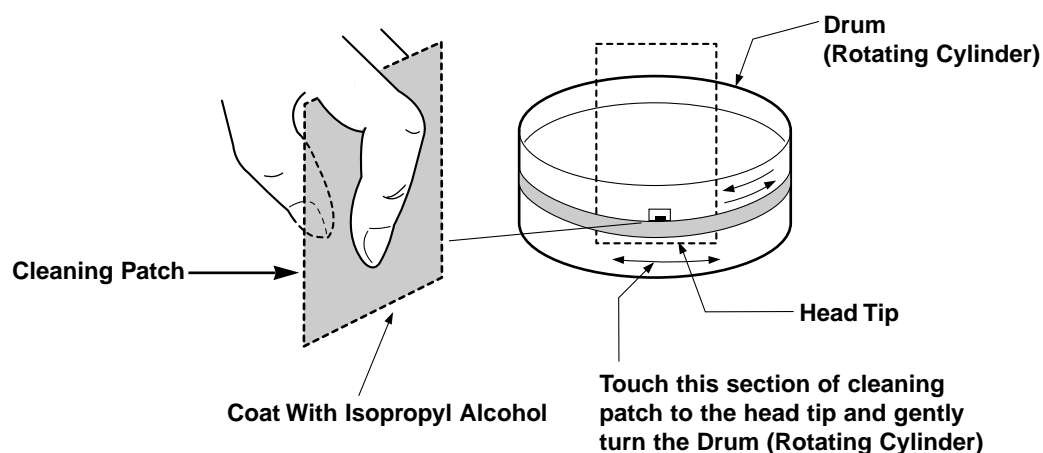


Fig. C-9-4

MAINTENANCE/INSPECTION PROCEDURE

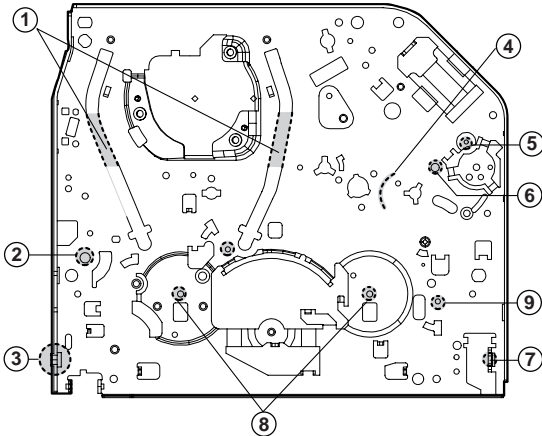
5-2) Greasing

(1) Greasing guidelines

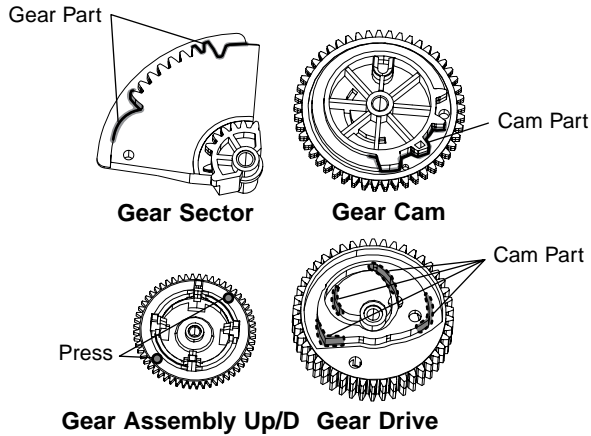
Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with cleaning patch wetted in Isopropyl Alcohol.

NOTE: Greasing Points

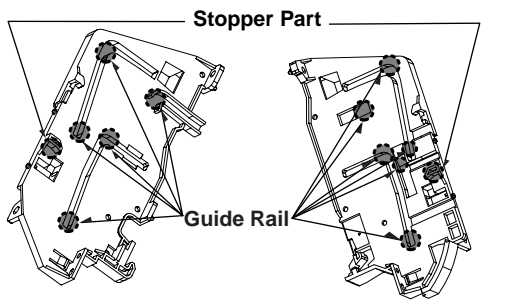
- | | |
|-----------------------------------|---|
| 1) Loading Path Inside & Top side | 6) Shaft |
| 2) Base Tension Boss inside Hole | 7) Arm Assembly F/L of Buming Inside Hole |
| 3) Arm Assembly F/L "U" Groove | 8) Reel S, T Shaft (G381:Yellow) |
| 4) Arm Take-up Rubbing Section | 9) Brake T Groove |
| 5) L/D Motor Worm Wheel Part | |



Chassis (Top)



Gear Sector Gear Cam Gear Assembly Up/D Gear Drive



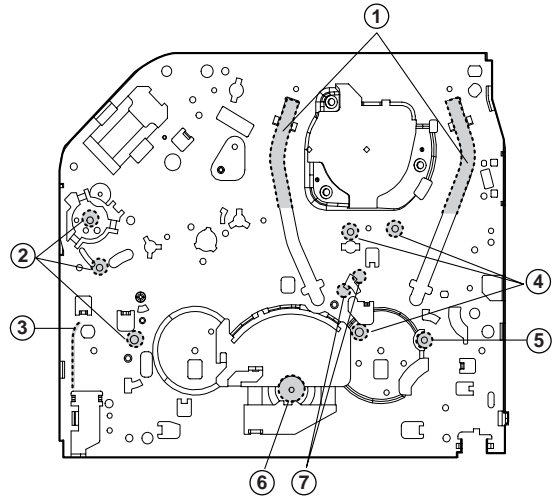
Bracket Side (L)

Bracket Assembly Door

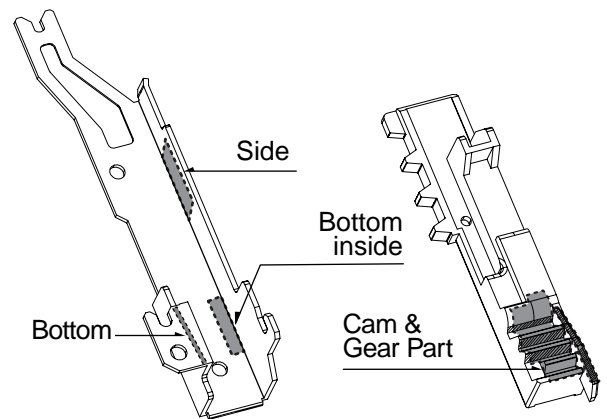
(2) Periodic greasing

Grease specified locations every 5,000 hours.

- | | |
|-----------------------------------|------------------------------|
| 1) Loading Path Inside & Top side | 5) Lever Tension Groove |
| 2) Shaft | 6) Clutch Assembly D33 Shaft |
| 3) Gear Rack F/L Moving Section | 7) Brake "S" Rubbing Section |
| 4) Shaft | |



Chassis (Bottom)



Guide Rack F/L

Gear Rack F/L

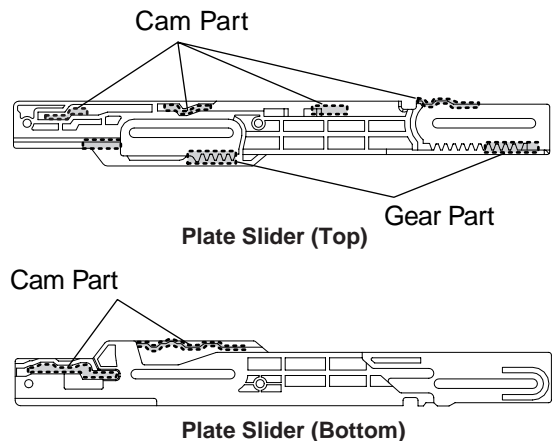


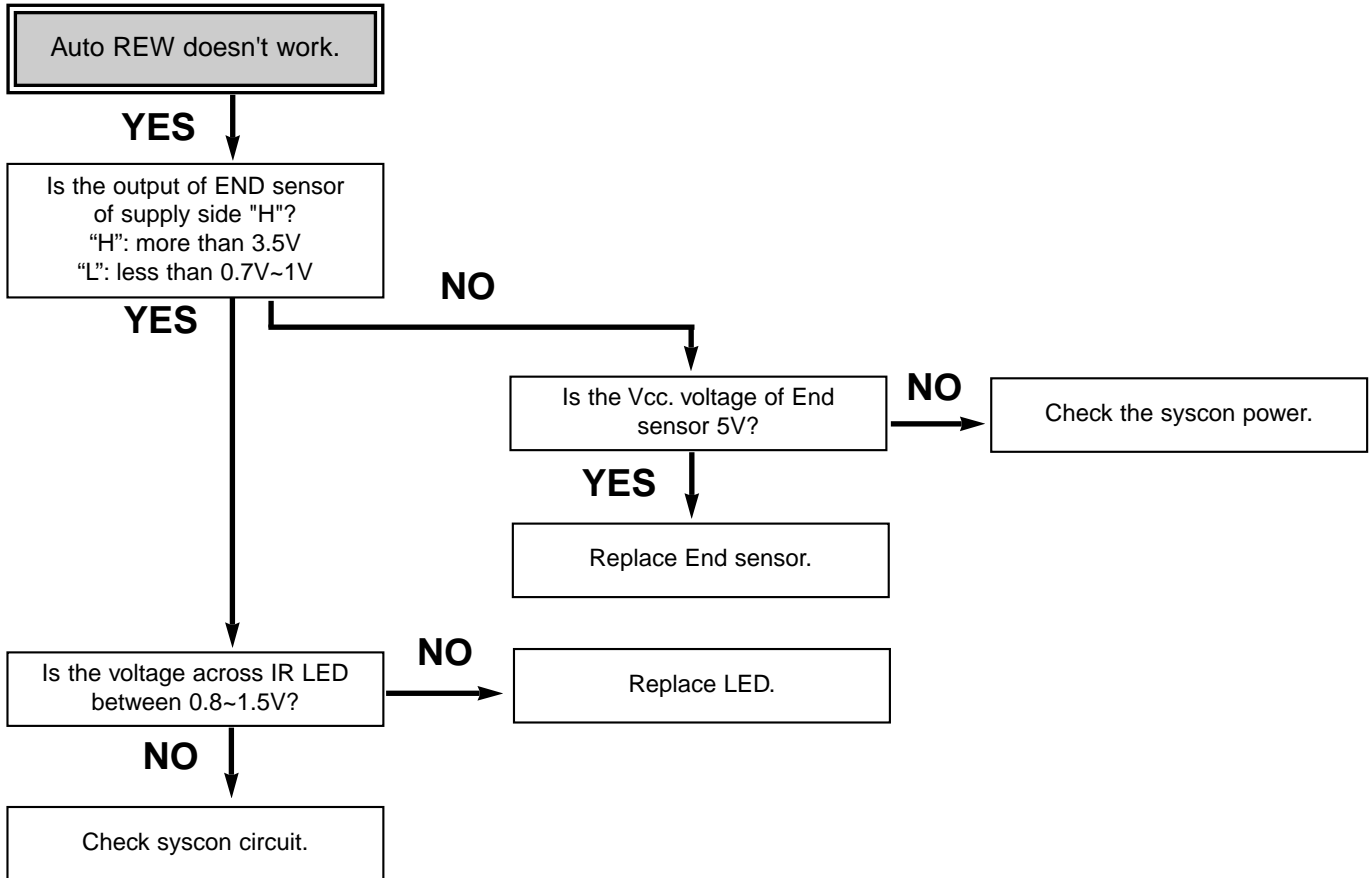
Plate Slider (Top)

Plate Slider (Bottom)

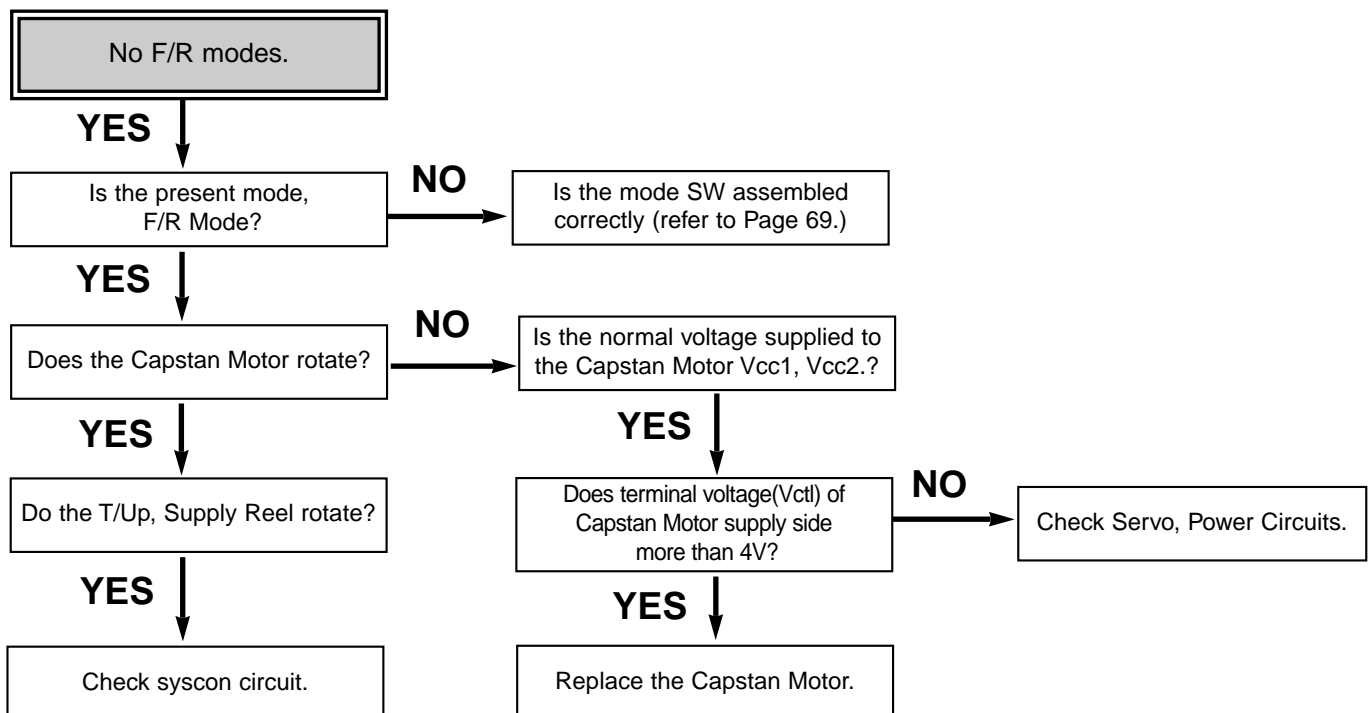
MECHANISM TROUBLESHOOTING GUIDE

1. Deck Mechanism

A.

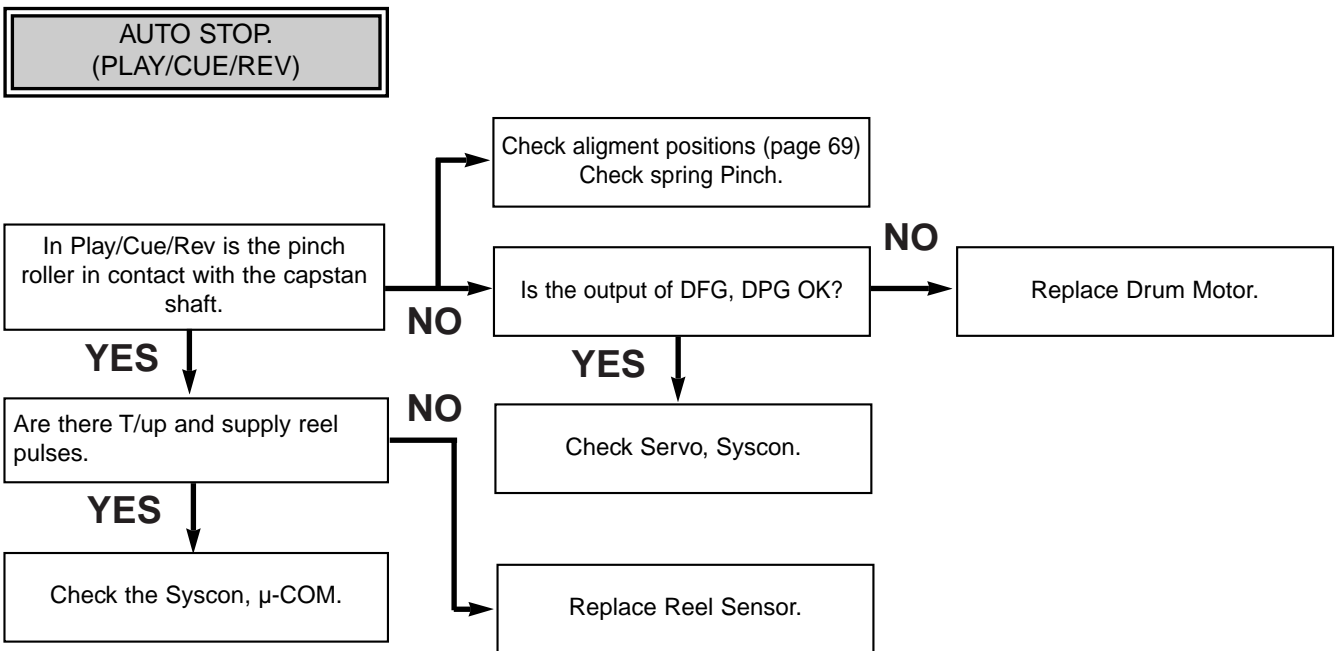


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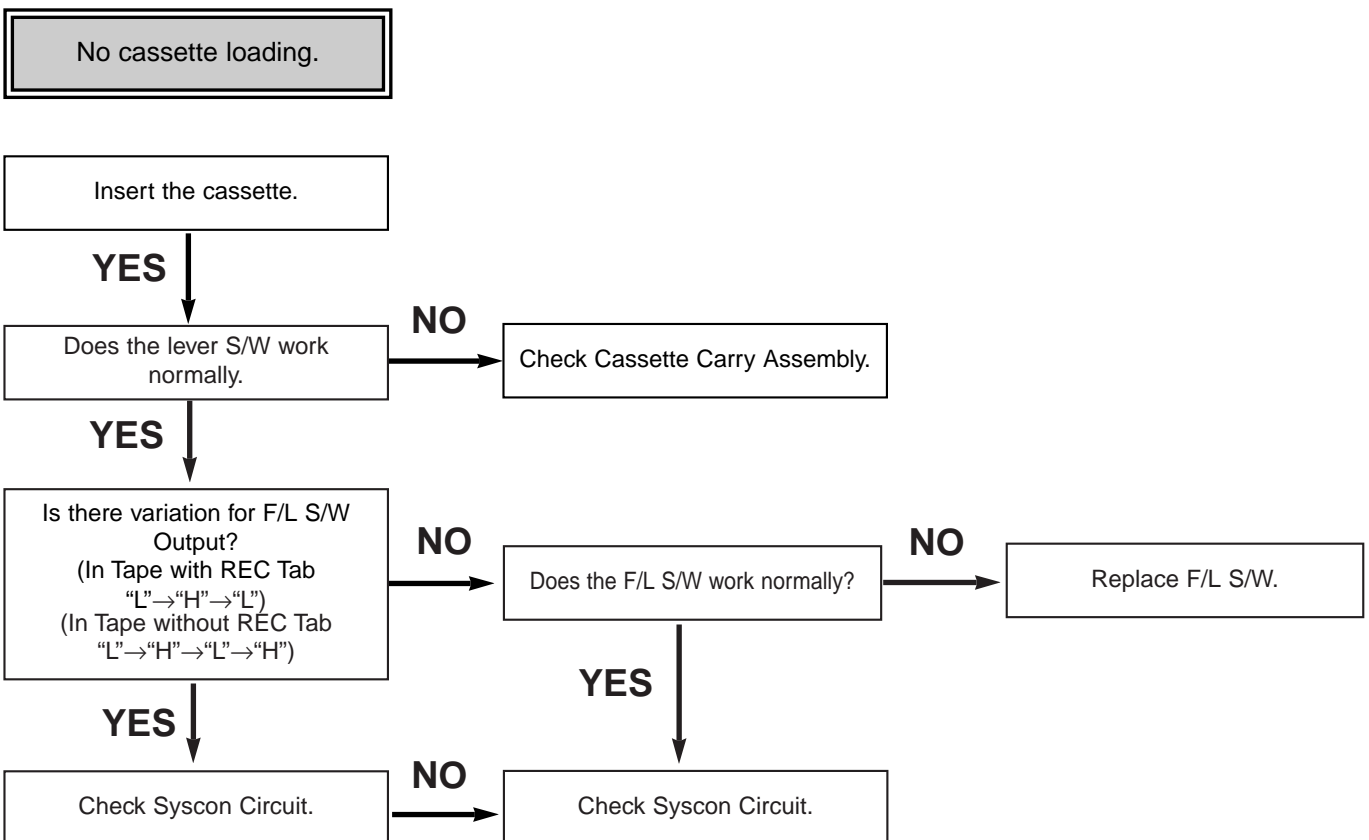


MECHANISM TROUBLESHOOTING GUIDE

C.

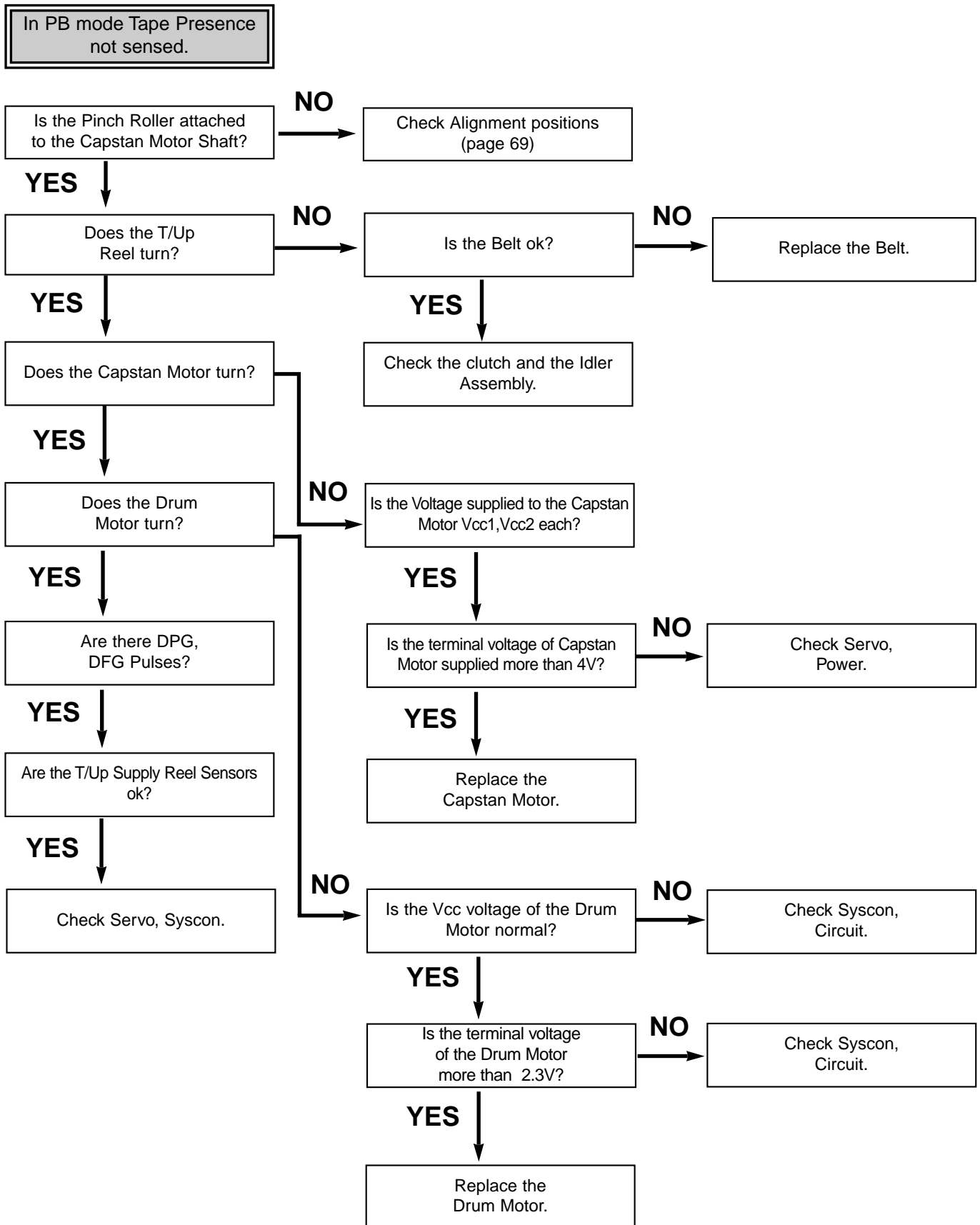


D.



MECHANISM TROUBLESHOOTING GUIDE

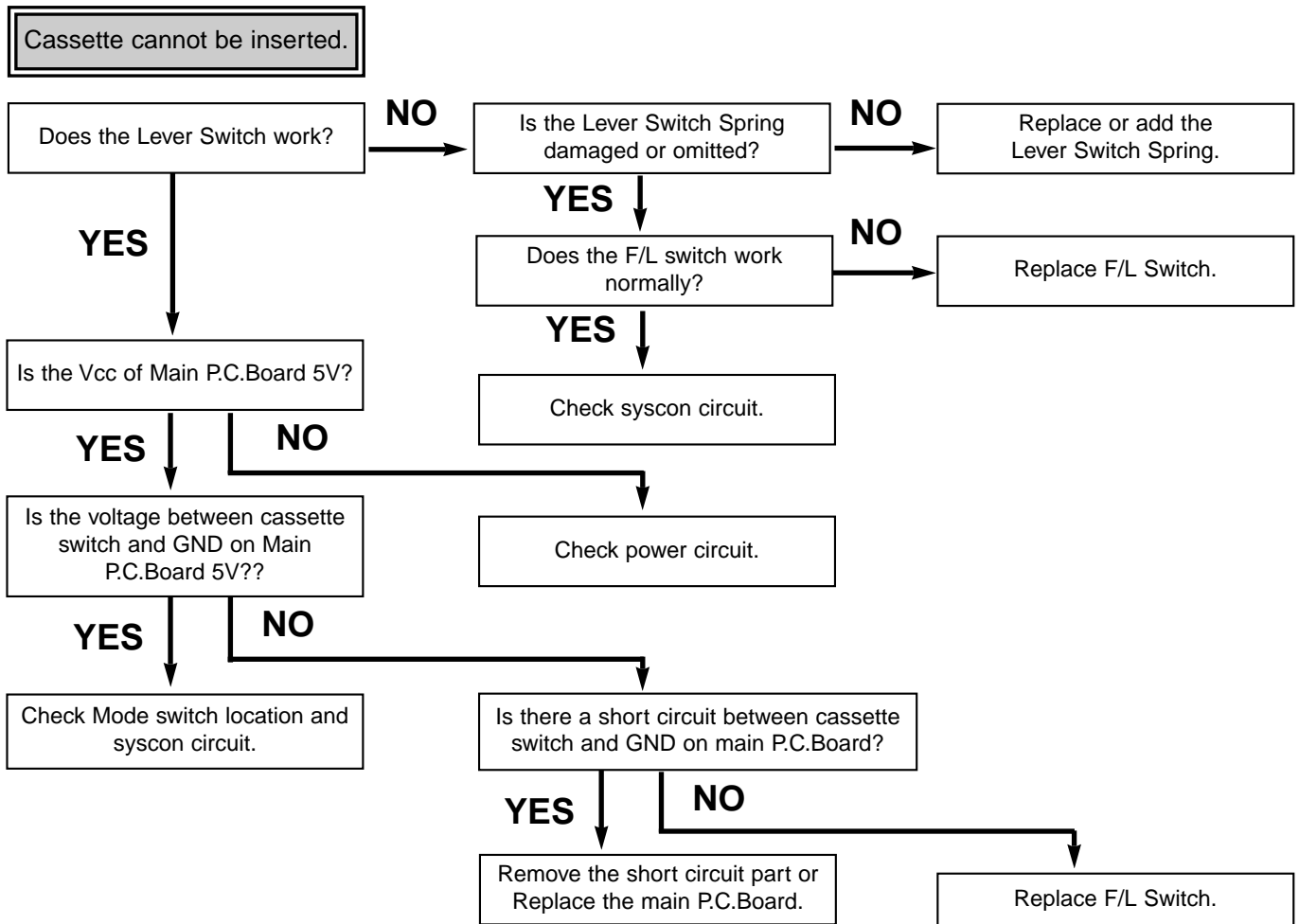
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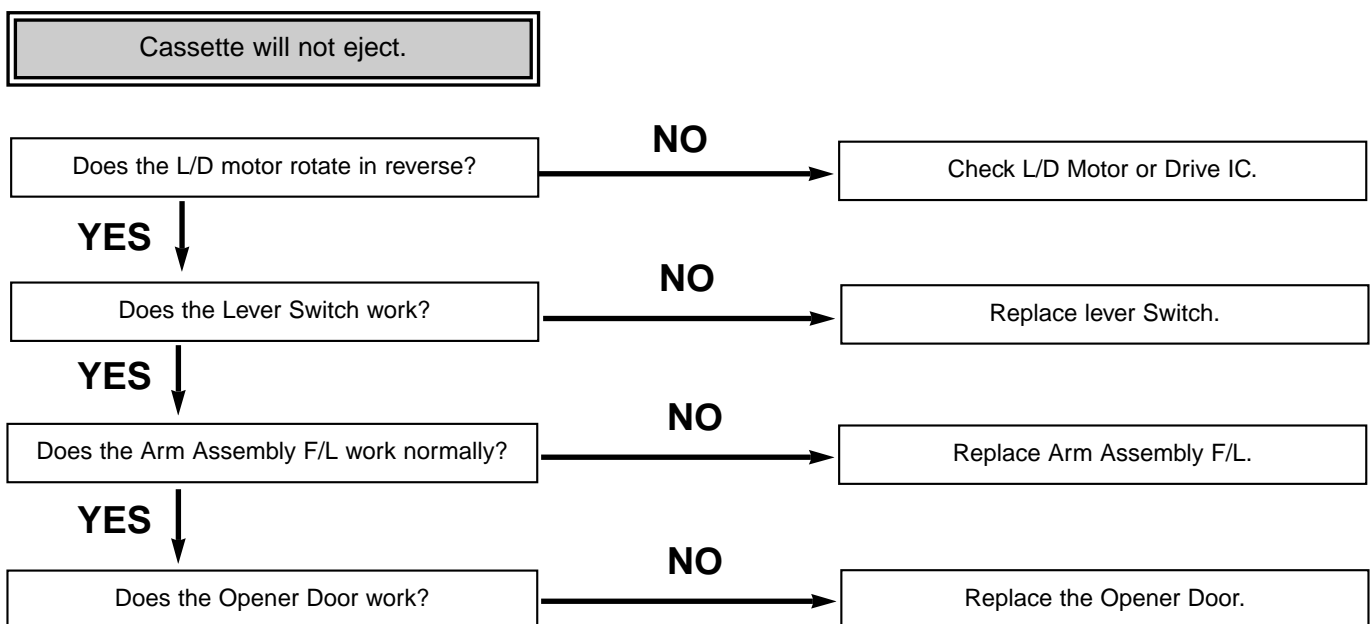
MECHANISM TROUBLESHOOTING GUIDE

2. Front Loading Mechanism

A.

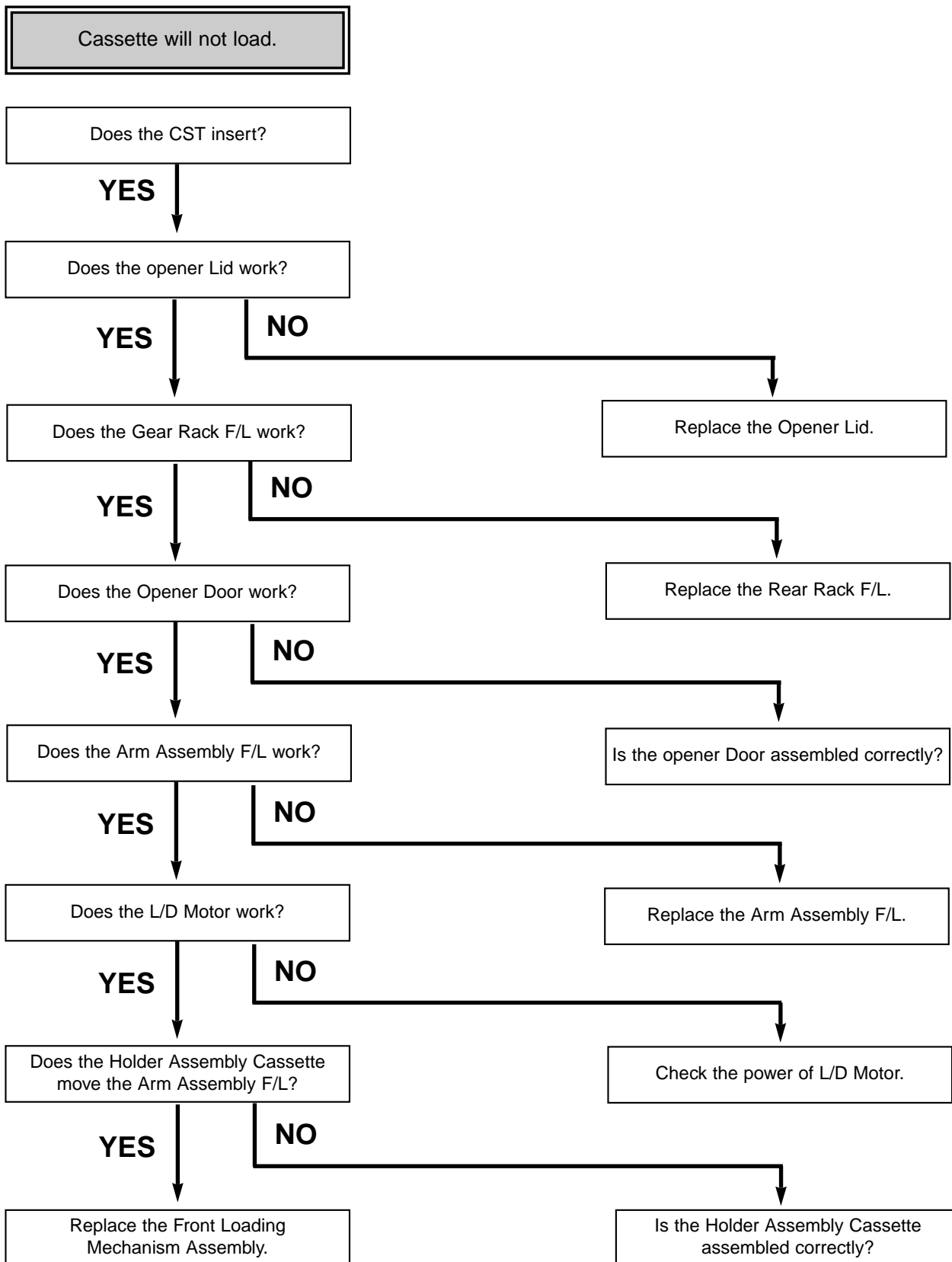


B.



MECHANISM TROUBLESHOOTING GUIDE

C.





サービス技術ニュース	
番号	連絡内容
Gーー	
Gーー	
Gーー	

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